



# The unified model of nucleosynthesis and star & planet formation in black holes, explosive and effusive volcanism, geochemistry, bolides, gravity and spontaneous explosions of nuclear reactors

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1   **The unified model of nucleosynthesis and star**

2   **& planet formation in black holes, explosive**

3   **and effusive volcanism, geochemistry,**

4   **bolides, gravity and spontaneous explosions**

5   **of nuclear reactors**

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7   Valbonne

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9   nucleosynthesis

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24 *Abstract : The heavy elements are synthetized in black holes and expelled thanks to local*  
25 *supercriticities inside. These black hole eruptions produce pieces of heavy atoms catching with*  
26 *them some of the black hole, a wrapping event around that black hole produces the star (in case*  
27 *there is enough mass for sustained fission), planet / moon and nuclear fission is together with*  
28 *fusion the motor of stars. This is demonstrated through many levers. Gravitational waves are*  
29 *constituted by waves of neutrons, when they impact the ground they may trigger underground*  
30 *nuclear blasts, that produce magma caves (explaining volcano swarms). Black holes erupting*  
31 *from the inside of the stars produce hyper variations in the regime of brightness (eruptive*  
32 *variables for instance), and in planets or moons, effusive volcanism, as well as supercavitating*  
33 *bolides (fireballs such as the one causing the event of the Tunguska in 1908). The strike of*  
34 *gravitational waves may be powerful enough, in a rare case, to blast all nuclear plants working in*  
35 *continent-wide regions. Things such as the ridge on Iapetus, the "actinide boost" in stars,*  
36 *"earthquake lights" and the "crown of stars in the sky" (in religious texts) and can be explained*  
37 *thanks to this model.*

38

39 Oklo is only the very tip of the iceberg – a seed for thought but nowhere near close to the extent of  
40 the importance of nuclear fission in nature – which is hugely significant, crucial in volcanism and  
41 star dynamism, and in the production of all stable elements (for the light elements before the split in  
42 the Aston curve, through ternary fission products and then fusion under intense pressure and heat).  
43 The « actinide boost » in a number of stars is a long-time issue which can be resolved – so is the

44 issue of “volcano clusters” and the extreme solar particle events leading to recorded spikes in  $^{14}\text{C}$   
45 and  $^{10}\text{Be}$ , as well as the depletion in  $^{238}\text{U}$  in volcanic lavas, star “bursts” in nebulae, antineutrinos  
46 found in acute levels near subduction areas of the Earth thanks to KamLAND in Japan, and many  
47 other elements that will be concisely presented in this paper. Some stars have been confirmed to be  
48 uranium and thorium-rich. This is confirmed by spectral research, see for instance Hill et al 2017 as  
49 well as Barbuy et al 2011. Both teams found U and Th – rich stars and used the classical theory to  
50 assess that these stars are very old. They should on the contrary be relatively *recent* agglomerates of  
51 matter. All of these elements, among others that will be presented below, can be linked to the same  
52 very easy explanation of nuclear fission in stars and planets – together with “earthquake lights” that  
53 simply show light from underground nuclear explosions escaping thanks to fault lines.

54

## 55 **1. On volcanoes**

56

57 Barytine and zirconium mines are located close to old volcanoes, as cesium and rubidium mines  
58 (Bernic Lake for instance is the most famous) ; one of the main mines for palladium and platinum,  
59 the Stillwater mine, is in the granitic Beartooth mountains of Montana ; volcano eruptions are also  
60 well-known sources of bromine and iodine that are light elements with a very low boiling points  
61 (see for instance Aiuppa et al 2005 on Etna emissions of bromine and iodine). All these elements are  
62 the daughter products of major fission products, for thermal neutrons. The part 5 of the article  
63 points to a geological differentiation based on the yield of fast neutrons, for the atoms indium and  
64 tin on which data has been found, explaining why they do not occur in areas of explosive  
65 volcanism (only in granite).

66 These elements already confirm that nuclear fission is the motor for magmatic formation and  
67 explain the contribution of water to explosive increases of magma in subduction magmatic

68 chambers (tornillos which simply are nuclear explosions), as water brought by subduction is the  
69 perfect incident neutron moderator for nuclear fission supercriticities propped up sometimes by the  
70 impact of neutrons from nuclear supercriticities in stars. It suggests a direct link between novas,  
71 supernovas and volcanism. The KamLAND observatory presented the first proof for geoneutrinos  
72 in July 2005 (Domogatsky et al 2004 already noted a possible antineutrino confirmation of fission  
73 in the Earth's core) – De Meijer & van Westrenen 2008 use them to suggest continuously operating  
74 fission reactors in the Earth's core. MacDonald 1988 also notes findings of dihydrogen gas in the  
75 Kola borehole in Russian territory. This is also confirmed by the very high intensity of the  
76 antineutrino flux in KamLAND (much higher than in other detectors), close to a subduction area of  
77 the Pacific belt, as well as by research on the actinide content of volcanic ash. The ash of the St  
78 Helens volcano, for instance, was depleted in  $^{238}\text{U}$  and  $^{232}\text{Th}$  (Strauss et al 1981) when compared  
79 with surrounding soils.  $^{238}\text{U}$  was also depleted relatively to  $^{230}\text{Th}$  in volcanic ash (Huckle et al  
80 2016).  $^{238}\text{U}$  was more depleted than  $^{232}\text{Th}$  in granite rocks (Rosholt et al 1973), including up to  
81 165 feet underground after drilling the rock. The “removing” of uranium is easily explained by  
82 fission instead of erosion (as suggested by the authors of the last article).  $^{238}\text{U}$  has in average  
83 higher fission cross sections than  $^{232}\text{Th}$ , even for neutrons above 1 MeV. These elements confirm  
84 that  $^{238}\text{U}$ ,  $^{232}\text{Th}$  are major contributors to fission underground (involving therefore extremely fast  
85 neutrons, i.e. relativistic particles that have only begun to be slowed down by the impact onto the  
86 superior layers of the Earth's crust). Supercriticities are triggered by the intense pressure of rocks.  
87 Each supercriticality causes a “tornillo” and the light part of the molten down rock percolate in the  
88 direction of the surface of the Earth, leading to magmatic chamber formation. This percolation  
89 depressurizes temporarily the underground, slowing down the nuclear reactor until a new  
90 supercriticality is triggered by 1. spontaneous fission or, exceptionally, a nova / supernova where  
91 obviously supernovas are the main factor for the most violent cases 2. more pressure from the  
92 plaques 3. or an addition of water (and carbon from the organic debris on the plaques) from

93 subduction, 4. or heat (which accelerates the movement of atoms and increases cross section as  
94 neutrons are more likely to meet an atom throughout their life (or much more likely several of the  
95 above). For the 1., along with spontaneous fission must be added as well reactions of neutron  
96 spallation such as alpha,n (and, less frequently, gamma,n if an activation product of an anterior  
97 nuclear fission reaction has a gamma ray emission powerful enough to trigger a "photoneutron" - or,  
98 obviously, gamma rays from nuclear fissions, or photo-fission...). This is just a natural nuclear  
99 reactor. For the continuation of the nuclear fission chain reaction, even the neutron spallation caused  
100 by a proton (from neutron decay, or ternary fission products) onto a heavy element like lead (much  
101 more frequent underground than the light elements needed for alpha, n and gamma,n), and of course  
102 n,n and n,2n with the same heavy elements, can help.

103 Many low-scale volcanic events can be triggered without a significant nova (for instance the  
104 permanent activity of the Stromboli volcano), yet supernovas are easy to link to simultaneous  
105 intense volcanic activity (high VEIs and supervolcanos) in geographic clusters (indicative of impact  
106 zone for supernova neutrons), as I show in part 3. These element can allow us to reconstitute not  
107 only a planetary motor for temporary increases of fission and fusion (where, underground, the  
108 intense pressure onto ternary fission products may allow for some nuclear fusion, explaining the  
109 accumulation of dihydrogen as well as other light elements close to the Earth's surface found for  
110 instance in the Kola peninsula noted by MacDonald in 1988, the findings of water as ice in  
111 diamonds coming from deep in the mantle by Tschauner et al 2018, or the fact that one of the main  
112 minerals containing lithium, lepidolite, contains as well several atoms of oxygen), but also of course  
113 for the permanent dual fission-fusion motor of stars, under a much higher pressure due to the initial  
114 mass, which I claim to be constituted solely by heavy atoms, i.e. actinides and, if there are islands  
115 of stability, atoms that could be much beyond the actinide class, maybe much more exotic atoms not  
116 yet produced in experimental research but that could certainly be confirmed one day, and thus more  
117 likely to fission due to their heavy mass (and thus obviously unlikely to remain if these atoms have

118 all fissioned earlier in the Universe's history even though some should remain deep underground  
119 and in dwarf stars ; or, better said, in the history of our local area, visible to our instruments, as will  
120 be pinpointed at the end of the article). The fusion under intense pressure of ternary fission  
121 products, beta minus particles and neutrons produces lighter atoms such as oxygen, carbon, and can  
122 very clearly be a better explanation for most massive hydrocarbon deposits than the current model  
123 of carboniferous-era remains of vegetals and animals (it is simple to note the proximity of all major  
124 coal / oil / gas deposits and significant granitic areas / uranium mining areas – the Arabian  
125 Peninsula has a magmatic shield, the tar sands mining areas in Alberta, Utah, Wyoming, Colorado  
126 are not far from uranium mining areas, the situation is identical in Russia and Kazakhstan, the old  
127 coal resources of Eifel in Germany and St-Etienne in France are in plutonic soils, the hydrocarbons  
128 in the Northern Sea are close to the granitic areas of Scotland, same for Norway's hydrocarbons  
129 near Stavanger) and the hypothesis that carboniferous era remains of vegetals and animals are  
130 linked to hydrocarbons is in the view of the author wrong as a whole especially as other deposits  
131 e.g. delta deposits are simply explained through river charring of these hydrocarbons. It explains as  
132 well as the emergence of the first resources of water (confirming obviously the old theory of water  
133 originating from volcanoes).

134

## 135 **2. On stars and planets**

136

137 Type 1A supernovas are evidence : the passing of a big star close to a very small one mean that the  
138 small one will receive much more neutrons as well as hydrogen captured by gravity than it is  
139 accustomed to in its internal nuclear equilibrium ; thus it reacts extremely violently, and goes  
140 hypercritical. The bright light of Type 1A supernovas confirms that dwarf stars are mostly made of  
141 heavy actinides (and the more hypothetical heavy transactinides in case there is one or several

142 islands of stability), but that these dwarf stars failed to light up (to stabilize at criticity) due to  
143 insufficient mass and thus did not accumulate the much needed hydrogen moderator and fusion  
144 fuel. The amount of unfissioned heavy actinides (and hypothetical transactinides) explains  
145 extremely well the powerful light of these supernovas which are highly dominated by fission  
146 whereas other supernovas are more equilibrated between fission and fusion (as the internal core  
147 made out of actinides / transactinides collides with the outer sphere at detonation, compressing it  
148 and fusing it). Pluto is absolutely certainly such a sub-brown dwarf star that has been captured by  
149 the Sun (as it is in an orbit that is not parallel to the rest of the Solar System) and which underwent  
150 temporary criticality at some point in its life before cooling down, the lightest elements produced  
151 through fusion processes, i.e. carbon, hydrogen, ending up at the surface, forming methane ice.

152 The discovery by Head et al 2011 of an intense volcanism on Mercury also confirms the heavy  
153 interaction between solid heavy atoms planetary cores and neutrons from the permanent fission  
154 processes in stars. Mars, where iron oxyde is significant, can be opposed to Venus, with a lot of  
155 basalt and volcanoes (where the planet seems an immense volcano bubble), and thus Mercury  
156 certainly was even more active but has, in a way, “expired” because of too much neutron fallouts  
157 from the Sun burning fast its actinides (and, potentially, transactinides in case there is/are island(s)  
158 of stability but I would hypothesize that such super heavy atoms with a long half life would also  
159 have a very elevated cross section for fission ; in fact it seems likely that they would act as “trigger”  
160 for the flaring up of stars<sup>1</sup>).

161 It is obvious that gas bubbles would not alone survive close to a black hole. A much heavier star  
162 core, made with actinides and transuranics beyond the actinide class, would however resist the

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<sup>1</sup> One scenario is that these extremely heavy atoms, staying close to the core of the star, would need extremely fast neutrons to have a good cross section yet for these extremely fast neutrons (close to c), their cross sections would be much higher than for lighter atoms. It may even be possible that very few of these super heavy atoms could be still found inside the mantle of Earth and that they have a special contribution to explosive volcanism, for super-eruptions).

163 permanent attraction of the black hole. The recent discovery of proto stars close to a black hole is an  
164 excellent confirmation that stars are not made with light elements but with heavy, radioactive  
165 actinides and transuranics beyond the actinide class, compressed up to a permanent fission reactor  
166 thanks to the strength of gravity, where complex nuclear reactions create the hydrogen fuel (tritium  
167 for instance is an unfrequent fission product from ternary fission) for the parallel nuclear fusion  
168 process and the thermalisation of neutrons, whereas gravity also increases pressure and thus reduces  
169 critical mass.

170 Neutrons from fission will themselves decay over a certain time into protons, with a beta minus  
171 decay, they are the basic bricks of hydrogen. Ternary fission sometimes produces protons. All of  
172 these protons can combine with beta particles from fission products to produce hydrogen. Positrons  
173 from the capture of helium-4 nucleii of actinide & transuranic decay and ternary fission products  
174 (where lighter elements capturing an alpha particle decay by emitting a positron) are another  
175 element as they conjoin with neutrons and beta particles of fission products to create hydrogen.  
176 Fission products beta particle decay is crucial and demonstrates here its “usefulness” in the global  
177 star cycle. Tritium from ternary fission also is a source for helium-3 which then produces protons  
178 through neutron impacts. Fission products and their transmutation are a key in production of other  
179 elements together with nuclear fusion of for instance helium-4 from ternary fission products (in  
180 combination with the electrons of fission products beta decay). Hence ternary fission is key in  
181 providing the usual nuclear fusion cycle with its fuel. I claim that light elements in stars are solely  
182 the product of nuclear fission, ternary fission products and radioactive decay, through combinations  
183 of the elementary particles in a context of high gravity forces and temperature, and of course slow  
184 capture of neutrons, which also contributes obviously to the diversity of heavy elements beyond the  
185 iron limit of the Aston curve, from neutron activation of fission products combined with radioactive  
186 decay.

187 Neutron stars are also an excellent way to see the expulsion of all fission product matter outwards in  
188 violent hypercriticity events where only neutrons remain at the end, agglomerated and compressed  
189 by their own gravity forces.

190 A thermonuclear reactor at equilibrium is obvious (where the progressive loss of heat & mass leads  
191 to decompression and the slowing down of fission and fusion), where interactions with nearby  
192 supernovas are a major and essential factor in star divergence onto supernova through intakes of  
193 neutrons and other elements (hydrogen and helium for instance) disrupting the internal equilibrium,  
194 and “waves of supernovas” from one star to another. These neutrons are major constituents of the  
195 masses of accelerated matter that explain gravitational waves (which is also confirmed by the recent  
196 confirmation of gravitational waves in association with the collision of neutron stars, likely to expel  
197 a lot of neutrons at impact & implosion under themselves). In the collision of black holes as well it  
198 is not surprising to see them eject very small particles and not heavy atoms.

199

### 200 **3. Supernovas and volcanism**

201

202 It also appears that supernovas close to Earth like the one giving birth to Barnard’s Loop are linked  
203 to supervolcanoes, in this case the Huckleberry Ridge Tuff and Cerro Galan supervolcanoes.  
204 Neutrons from the Lagoon Nebula may also be linked. It may be possible to envision a better  
205 datation by linking Lagoon Nebula initial blast to Barnard’s, which could have happened closer to  
206 each other than thought until now, and a method for predicting supervolcanoes from supernovas.  
207 The high temperature of stars around SN1987A even more suggests that the dramatic event  
208 provided neutrons to the fission core of these stars. The sudden relapse of gravity when a star  
209 explodes could act as a propulsive power for its own fission and fusion neutrons, which may gain  
210 speed up to close to the speed of light. All the VEI 6 volcanic eruptions in the 20<sup>th</sup> Century can be

linked to supernovas which happened close to Earth in recent times : G1.9+0.3 happened approximatively in 1898 according to recent research and this event can be linked to the Santa Maria (VEI 6) and Montagne Pelée (VEI 4) eruptions of 1902 as well as the beginning of the activity of Novarupta (1912, VEI 6 – Hammer et al 2002 suggest that the build up to that eruption could have been slow) and of the Cerro Azul (1903, which led to a VEI 6 eruption in 1932 after a succession of volcanic events). SN 1987A may be linked to the Pinatubo eruption of 1991 (VEI 6), Hudson in Chile (1991, VEI 5+) as well as Rabaul (1990 - 1995) and Unzen volcanos (1991). For the Samalas supervolcano in 1257 (see Lavigne et al 2013 as well as Oppenheimer 2003), SN1006 could be the ideal explanation (in which the magma would have accumulated during a longer period than usual, leading to a bigger eruption than in the VEI 6 cases discussed above). SN1054 and SN1181, after SN1006, may also have contributed if the Indonesian archipelago was on their side at impact. SN 1604 may be linked to a lengthy accumulation of magma leading to the Mount Tambora supereruption (with the possible supplementary contribution of Cas A), and can even be linked locally to events such as the small volcanic eruptions that actually took place in the granitic – uraniferous-rich Mercantour massif in the French Alps, recorded in 1612 after the disappearance of an entire village (St Jacques) into a crater of “flames” (a plaque still commemorates the event near Valdeblore with the inscription “Hic omnes disparuerunt recquiescant in pace – 1612”) and another lava flow recorded at the same time (in the nearby Cians under the Raton mountain near the Dôme du Barrot) – see Rossi (2017), local historian pointing to this eruption in what is obviously a remain of the Alpine Arc volcanic chain close to the Mediterranean and thus still likely to be water-rich in the underground. SN1604 also coincides with highly destructive eruptions in the Mediterranean area (Vesuvius 1631, Kolumbo (Santorini area) 1650 and Etna 1669). It actually makes sense that light may be refracted and slowed down for instance in the Milky Way because of clouds of refractive materials with no similar effect on fast neutrons so that neutrons come *earlier*, hence linking Type 1a SN1006 with the Mount Baekdu supervolcano in the end of the 10<sup>th</sup> century

236 (sometimes dated in 946 but with some uncertainty), where the magnitude of a Type 1A supernova  
237 explains the magnitude and quickness of development of the event. It is extremely critical to see  
238 that the 993-994 14C boost (confirming neutron impact) matches perfectly the timeline of that  
239 event. Another more powerful 14C boost in 774 – 775 corresponds with a stellar event noted by  
240 Chinese astronomers as “comet crash” or “thunderstorm” according to Chai & Zou 2015 but which  
241 ought obviously to be another more powerful supernova leading to more powerful super eruptions.  
242 Of course as always it is a precise side of the planet that is blown and thus a cluster of eruptions in a  
243 localized area, e.g. one continent, ensue. Spontaneous fission of actinides underground and smaller  
244 novas explain less powerful eruptions.

245

## 246 **4. Nuclear safety revisited**

247

248 All the events discussed here have in common that the supercriticality happens in reactors with null  
249 or positive void coefficient. Water-moderated reactors are more resistant due to the vaporization of  
250 water in case of an increase in the fission rate. The October 1969 accident at St Laurent des Eaux  
251 (gas cooled reactor with null void coefficient) was followed by two eruptions in the Northern  
252 Atlantic (Hekla in May 1970, Jan Mayen in September 1970). Cosmos 954, a satellite carrying a  
253 uranium reactor, exploding above Canada is another example. Its destruction in January 1978 was  
254 followed by the eruptions of the Soufrière Hills in 1979 and of the St Helens in 1980. The St  
255 Laurent des Eaux (gas cooled reactor with null void coefficient, relatively unstable) 1980 accident  
256 was also followed by an eruption of the Hekla in September 1980. Followed another powerful  
257 eruption in El Chichon in 1982. The K431 nuclear attack submarine was, according to reports,  
258 surfacing and in refueling near Vladivostok at the moment of the blast, and hence unshielded from  
259 fast neutrons by layers of water. A bad manipulation in refueling would have officially triggered the

260 supercriticity, nevertheless a simple melting down of the core could have been expected, yet the  
261 supercriticity was explosive. Its explosion matches the beginning of volcanic activity in the Nevado  
262 del Ruiz (September 1985) and more eruptions in Alaska and Kamtchatka in the following years  
263 (Mount Augustine and Chikurachki 1986, Kliuchevskoï 1987, Mount Redoubt 1989-1990) ; it is  
264 obvious that as in the earlier cases a wave of relativistic neutrons obviously came on August 10 and  
265 destroyed the K431 reactor. The K431 was a fast neutron reactor (with lead bismuth coolant), which  
266 together with its surfacing explains the isolated nature of the event in relation to a very small event.  
267 For the K431 and the wave of eruptions in Alaska and Kamtchatka neutrons from SN1987A coming  
268 before the light of the supernova (due to refractive material slowing photons) are the possible cause  
269 esp. as the cluster of volcanic eruptions is stronger – together with the eruptions of the Kelud,  
270 Pinatubo and Hudson in 1991 – the more powerful eruptions taking more time to develop in a  
271 relative silence, underground except in particular cases such as the immediate presence of water in  
272 phreato-magmatic eruptions (Krakatoa 1883 for instance) improving immediately moderation of  
273 the neutrons.

274

## 275 **5. Giant dipole resonance fission**

276

277 The cross section for fission at very elevated neutron speeds of all actinides including  $^{238}\text{U}$ ,  $^{232}\text{Th}$   
278 are rising due to second-chance fission, i.e. ( $n, 2nf$ ), third-chance fission, etc. and giant dipole  
279 resonance. Tarrio et al (2011) allow to suggest that even lead, bismuth will fission at high neutrons  
280 speeds and there are certainly more stable heavy atoms that can fission with even faster neutrons.  
281 The author has observed such a phenomenon in lead paint as he felt a neutron strike in his body on  
282 Sept 24, 2018, in the first hours after midnight French time, and saw, *minutes* after that, while  
283 looking (in a dark room) at the area painted with that lead paint, the emergence of a few small

284 bubbles of *green* light that quasi immediately disappeared while propelling smaller white sparks  
285 that all ricocheted around in a circle, with more or less the same angular momentum for all sparks,  
286 making the author claim it is a clear sight of lead fission with the Compton effect following. The  
287 green light can be explained with a change in the dominant wavelenght of the photons produced  
288 because the high oscillation of the fission products blocks all light (produced in the scission area, in  
289 between the two fission products) that is *outside the center of the visible spectrum*. The traditional  
290 image of the “black sun” represents obviously historical representations of a phenomenon that is not  
291 so unfrequent in nature for people living in caverns where lead is present (in the Scandinavian  
292 Alps)<sup>2</sup>. The giant dipole resonance causing fission in lead certainly is a phenomenon with a long  
293 metastable state (lasting minutes) before destabilization and fission. It is what has been observed  
294 here. This phenomenon can also be confirmed by looking at e.g. yttriaite crystals in tungsten (Mills  
295 et al 2011) that indicate fission with relativistic neutrons and the perfect slicing of tungsten  
296 producing Y<sub>2</sub>O<sub>3</sub> crystals and other craters in native heavy metals (iridium, gold, platinum etc).  
297 It is anyway obvious that the impact of a significant neutron wave will result in the destruction of  
298 all working nuclear reactors in a wide area. The last powerful supernova dates back the 17<sup>th</sup> century.  
299 Nuclear reactors can be expected to be destroyed by the impact, not simply molten down, and the  
300 catastrophe should happen simultaneously in reactors on a wide area, e.g. continent-wide.  
301 Such waves cannot be predicted. Clouds of dark matter may make it for instance impossible to see  
302 dwarf stars that are in the path of giant red stars, and Type 1A are the most neutron-rich supernovas.  
303 It is impossible to shield completely nuclear reactors but building very large pools of water above  
304 and on top of current nuclear plants could be a partial remedy, yet the structure must be solid  
305 enough to avoid any chance of an explosion bringing flows of water on a molten nuclear core. It is a

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<sup>2</sup> In popular culture, the *pokemon* Spiritomb also closely idealizes such a rotating effect with a green bubble in the center and the designers explain that « this Pokemon appears in fissures of caverns », it typically is another representation of that giant dipole resonance fission of lead

306 good for a bad. The alternative would be to use dihydrogen tanks all around confinement areas, with  
307 the obvious fire risk and the clear target it represents for terrorism, yet that light gas ought not to  
308 enter in contact with the core in case the confinement is broken by a blast and the moderating effect  
309 on neutrons would be much more limited. In future times all new nuclear plants should be built  
310 deep underground and all employees should control the plant from a significant distance, allowing  
311 that any explosion of the plant be solely an underground earthquake without any human casualty  
312 (and the author of the paper campaigns for the generalization of subcritical designs, cooled with  
313 helium, using  $^{238}\text{U}$  and its decay products, i.e. mine tailings, for instance  $^{234}\text{U}$ ). The costs for  
314 building underground plants will be significant, reducing the competitiveness of nuclear energy.  
315 States using nuclear energy for e.g. aircraft carriers should look for alternatives, and the same  
316 comment applies for space missions with onboard nuclear reactors. The massive spreading of such  
317 underground nuclear reactors would still represent a danger in case an extremely powerful  
318 supernova was to happen very close to us, even though this is much less significant and solely  
319 economic if the plants are fully robotized. The use of subcritical technology in combination with its  
320 burying deep underground (one kilometer at least) would allow for an extremely good level of  
321 safety.

322

## 323 **6. Black holes, their eruptions, the cradle of stars and planets, 324 and the explanation for volcano hot spots**

325

326 The “bursts” leading to the formation of stars in “waves” (Beccari et al 2017) can be easily  
327 explained by waves of what I call *black hole eruptions*. Black holes are the obvious place for the  
328 formation of heavy atoms in high volume. It is the sole place where it can be expected that forces  
329 are concentrated enough to conflate particles into i.e. uranium and even heavier atoms. The

330 accumulation of energy in black holes cannot and never will be infinite even though it is on human  
331 time scales. Planck's temperature leads to this conclusion and the jets of plasma flowing out of  
332 black holes are already very well known. Findings of proto-stars close to black holes, as noted in  
333 the beginning of this article, and of formation of stars in "bursts" in a nebula known for its black  
334 hole (where another black hole is very likely to be expected right at the center of the "three cities"  
335 of stars), leads to these black hole eruptions, i.e. the rapid propulsion of fresh "blocks" of very  
336 heavy atoms (which can be suggested to be far away from the known end of the periodic table of  
337 elements, even with all experimentally known exotic atoms included ; many of these heavy atoms  
338 can be expected to have super high cross sections for fission and would certainly contribute very  
339 much to the flaring up of whole proto stars (i.e. the beginning of life of stars) if they are part of  
340 islands of stability). Black holes are in a metastable state because of the huge amounts of energy  
341 captured by atoms very far at the end of the Aston curve. It is very easy to suggest that the so-called  
342 Big Bang was solely a massive burst from a super giant black hole that could still be at the center of  
343 the known universe, that the cycle of atoms in space has no beginning and end and that space is  
344 infinite (which is an hypothesis of common sense and can simply be explained by black matter in  
345 the path making it impossible to see too far ; for instance, if the supermassive black hole was in a  
346 giant nebula, the energy of the eruption could have pushed away that cloud which would thus be the  
347 main barrier for light from outer systems of stars and black holes).

348 Micro black holes also sit *inside* stars and all planets and explain the volcanic hot spot dynamics as  
349 black hole eruptions of lesser power (these tiny black holes inject "bubbles" of heavy atoms into the  
350 inner core) here explain the occurrence of flood volcanism through the very rapid rejection of  
351 matter that accumulated and fused over millions of years inside these black holes, again as actinides  
352 and possible transactinides prompting a quick chain reaction from the very core of the Earth and  
353 producing the heavy amounts of magma leading to flood basalt provinces.

354 For stars, the hypothesis of a black hole at the center provides the ideal explanation for the black  
355 hole that is found after very powerful supernovas. This black hole is not produced by the supernova.  
356 The very high yield simply means that all atoms fission and that neutrons as well are expelled. The  
357 black hole was already inside before. There is in fact no process explaining rationally the formation  
358 of a black hole. Black holes are part of space, they agglomerate matter (inside, and when too much  
359 elements are attracted onto a too small black hole, the matter coagulates around as in a very strong  
360 bottleneck leading to the formation of a proto star). In a supernova of a lesser yield (or with higher  
361 magnitude of light as there is a lot of energy from fission but few light atoms to fusion, in a young  
362 instable star, leading to a lesser explosive power) the power is not enough to expel many neutrons  
363 that will form such a bottleneck, i.e. neutron star. The progressive attraction of atoms from the inner  
364 core of the object in the black hole leads to the periodic bubbling of heavy atoms. It is a periodic  
365 process. There is, on Earth, a minimal threshold before the beginning of a new hot spot. In stars  
366 where much more elements are agitated continuously and the rhythm of exchanges between the  
367 bottleneck and the black hole is obviously of rates of vast magnitudes above what happens in  
368 planets, the rhythm of eruptions will also be higher, which can be confirmed through the known  
369 phenomenon of eruptive variable stars.

370 As it is obvious that telluric stars simply are very small proto stars which have not received enough  
371 neutrons to become critical, it is also obvious they simply have a black hole of smaller size in their  
372 core and the hot spot processes on Earth and on Mars are an excellent proof for the eruption of these  
373 black holes. Simply, the bottleneck will not be fully stable, the inner core is slowly sucked in the  
374 black hole and when enough matter has been captured for the black hole to go out of its metastable  
375 state, an eruption happens bringing newly formed heavy atoms into the bottleneck, increasing  
376 pressure, producing of course strong nuclear fission supercriticalities and bringing that matter up to  
377 the less dense areas, as the beginning of a hot spot. Indium is a very rare element on Earth that is  
378 found mostly in granitic areas ; this is another proof since granite is linked to hot spot volcanism

379 that cannot involve big amounts of water (at extreme depths) and indium is not produced in high  
380 amounts when the neutrons are thermalized. Indium is very frequently found together with tin in  
381 granite and tin is also a very unfrequent stable daughter of fission products unless the neutrons are  
382 not thermalized. It demonstrates that nuclear fission happens, in hot spots, at very high depths close  
383 to the “bottleneck area” under the sole high pressure of bubbles of heavy atoms coming  
384 unfrequently from the nano black hole in the center of Earth. “Ice volcanoes” on Pluto are certainly  
385 powered as well by the inner black hole of the sub-brown dwarf star, as the pressure produced by  
386 bubbles of heavy atoms from the black hole clearly produces small chain reactions and concurrent  
387 fusion processes, the produces of which are the lightest part of the magma – hence coming out more  
388 easily.

389 The presence of a “giant ocean” or its remnants in telluric planets (Oceanus Procellarum, the  
390 biggest plane on the Moon, the Pacific Ocean for the Earth, the Northern Lowlands for Mars, and  
391 the very big sea of ice methane on Pluto are excellent examples) is another excellent demonstration  
392 of the existence of a black hole in the center of these planetary objects. When the *outer* parts of the  
393 inside of the black hole are expelled by the eruption of energy accumulated from the supercriticity  
394 in the inner core of the black hole, they escape with the form of portions of a hollow sphere (as with  
395 the small incurved portions of an egg broken from the inside by an emerging chick – one can think  
396 of parabolic antennas) the portions all have a small extract of the black hole retained with them in  
397 the inside – so a very brutal and extremely rapid (maybe too fast for the eye) *wrapping event*  
398 happens :

- 399 1. All the atoms liberated from the black hole expand to take their full space, allowing void to  
400 occupy ~99% of the volume
- 401 2. So a “slingshot effect” around the small black hole inside the cavity means that the exterior areas  
402 of the piece collide together and a vast number of fissions and fusions happen. It is clearly the event  
403 that will light up the star if powerful enough.

404 In telluric planets, the "giant ocean" is the remain of that fission & fusion event, it is always circular  
405 before continental drift changes too much its shape as on Mercury and Venus where the more acute  
406 neutron flux from the Sun accelerated magmatism, as noted earlier. We can expect the exact same  
407 phenomenon on each planet containing a black hole in its core.

408 Another proof is, for some small satellites, the ridge that is very easy to see, on Iapetus for instance  
409 in the middle of the giant "sea". It proves definitively the "closure event" which is particularly  
410 obvious with the "walnut shape" of Iapetus. These are minor pieces with either a very tiny black  
411 hole inside (so far no volcanism is known on Iapetus but the number of craters suggests there could  
412 be some minor volcanism) or (hypothesis most likely for even smaller objects like Pandora, Pan,  
413 Prometheus, Atlas which have even more the shape of a "flying saucer" and no apparent crater)  
414 none at all. So the black hole from which the small piece was expelled hinders the wrapping event  
415 and the extremities (the "flaps") of the piece (shard) propelled out of the black hole are not perfectly  
416 brought together, there is a ridge that remains because of the exterior attraction forces and lack of  
417 inward attraction forces (a too small black hole inside means that centrifuge forces are dominating  
418 over centripete forces) : the flaps do not swing back around the center perfectly and the pressure at  
419 impact is more limited, explaining the ridge remaining on these objects.

420 Gas giants can be simply seen as star cores which have underwent criticity but were not massive  
421 enough to stay critical. They must come from shards bigger than those leading to telluric planets,  
422 but smaller than those of actual stars. The heavy atoms subsided, gases from ternary fission  
423 products and their interaction with other particles and neutrons such as hydrogen and helium are at  
424 the periphery.

425 It is simple to suggest that the relatively powerful closure event led to the satellisation of some of  
426 the matter fused at the closure point, a simple way to explain the formation of rings around such  
427 giant gaseous planets. For the Sun, a much more powerful closure event certainly created Kuiper's  
428 Belt and explains why chondrites are iron-rich.

429 The ridge on Iapetus is covered by light hydrocarbons (Cruikshank et al 2008) and Saturn's rings  
430 are composed mostly of ice water and amorphous carbon (Poulet and Cuzzi 2002) whereas  
431 chondrites are mostly made of silicates and other elements up to iron and nickel, confirming  
432 extremely clearly the more important intensity of the fusion event for a more massive shard leading  
433 to a fully critical star satellising lots of fused matter at the moment of the impact of the closure of  
434 the shard. Yet the fusion happened outside of a black hole and could not overcome the limit set by  
435 the high stability of the iron atom, unlike the processes in black holes described in this paper.

436 The so called metastable state in black holes can be expected to end through slow chain reactions  
437 starting in the very core of the hole ; it can be expected to happen solely with heavy atoms that have  
438 a good cross section for *almost absolutely inert neutrons* – so this should certainly explain the  
439 natural rarity of  $^{235}\text{U}$  as opposed to  $^{238}\text{U}$ , for instance.  $^{235}\text{U}$ ,  $^{239}\text{Pu}$  etc. can be expected to be  
440 produced in vast amounts in black holes ; there is no reason why the random processes of  
441 nucleosynthesis in black holes would give birth to so much  $^{238}\text{U}$  and so few  $^{235}\text{U}$  ; yet if some  
442 neutron manages to become a free radical in the compressed “magma” of atoms of the central part  
443 of the black hole, that neutron can be expected to travel *extremely slowly* and subsequent fission  
444 neutrons will also be slowed down almost infinitely by the extremely intense pressure so this  
445 presents a simple basic explanation of the  $^{235}\text{U}/^{238}\text{U}$  ratio found usually on Earth in spite of the  
446 constant regeneration of actinides by the black hole at the center of Earth and subsequent hot spot  
447 geodynamism.

448

## 449 **67. Gravity forces and the graviton / antigraviton couple**

450

451 It is, lastly, obvious that gravity is only dependent on the presence of a black hole inside stars and  
452 planets, i.e. that gravity is a black-hole dependent phenomenon. This is the simple epistemological

453 conclusion of the research, easily demonstrated with the absence of gravity on comets and asteroids.  
454 It is also inviting for what concerns research on a possible graviton ; the simplest hypothesis in the  
455 view of the author is to envision the graviton as a particle present together with all atoms in matter  
456 outside black holes and attracted by antigravitons produced exclusively in black holes during the  
457 abovementioned nucleosynthesis of heavy atoms, and partially expelled, by supercriticities, inside  
458 the smaller black holes of the shards ; strong attraction *inbetween antigravitons* in addition to the  
459 mutual attraction of gravitons and antigravitons (whereas of course there is no attraction between  
460 gravitons) is also a simple explanation for the consistency and permanence of black holes and for  
461 the tendency of black holes to collide ; it can here be expected that antigravitons turn into gravitons  
462 when expelled out of a black hole in the shards thanks to the release of pressure (high intensities of  
463 pressure together with heat can be seen crucially as the condition for a graviton to be turned into an  
464 antigraviton, which is simply another way of stating that strong attraction inbetween antigravitons is  
465 key in the consistency and permanence of black holes). At the expulsion, the antigravitons that are  
466 most separated from the cluster are set free from the minimum level of pressure required for them to  
467 be attracted by each other, and become gravitons. The pressure forms quasi-unbreakable links  
468 between gravitons as they become antigravitons. In shards, the presence of many atoms close to the  
469 antigraviton cluster is enough to keep fueling the antigraviton production process and to ensure a  
470 good binding of the outer layers of matter (the “slingshot effect”) around it (it is obvious that a lot  
471 of the matter that erupts from the main black hole and whose antigravitons turn into gravitons is  
472 immediately sucked back into the smaller black hole of the shard).

473

474 The model, together with black hole eruptions for instance, can be even confirmed through  
475 historical events reported in the New Testament through a romanticized approach : the “crown of  
476 stars in the sky” - which simply is the obvious crown of the Pleiads, which can be seen gravitating  
477 around a spinning black hole, the product of a recent black hole eruption. Flying matter from that

478 eruption obviously led stars closer to us, in the path, to increase activity : these stars are found in the  
479 Taurus and form more or less the shape of a human body. It is obvious that this was watched by  
480 many and led to apocalyptic descriptions in religious texts. The more traditional representations of  
481 the Virgin Mary show her with a crown of stars that is not circular but ovoid, her head ( $\alpha^1$ -Tau)  
482 bowing down "in prayers" to collate with the "aureola" ( $\alpha$  is a shoulder,  $\beta^2$ -Ori a foot,  $\nu$ -Tau the  
483 other foot, Aldebaran the pelvis and the stars forming a triangle ( $\alpha$  included) the body,  $\lambda$ -Tau a  
484 hand,  $\tau$ -Tau the other hand). It describes the stars around the spinning black hole in a way closer to  
485 reality.

486 In a black hole eruption the pieces of matter ejected can be much smaller than satellites. The form  
487 of Ultima Thule simply shows an atom in the process of fission that was ejected before the end of  
488 the scission. It is a direct confirmation of the production of extremely heavy atoms in a black hole –  
489 it is obvious that as the atom is "extracted" the particles dissolve and form lighter atoms, but the  
490 still strong closeness will mean that the first stable setups for these particles will be extremely heavy  
491 transuranics. The asymmetry of Ultima Thule confirms fission with very slow neutrons (one side of  
492 Ultima Thule is smaller than the other) in black hole eruptions, exactly as predicted in the model.  
493 Such atoms can be ejected very fast and will tend to conserve some antigravitons in a small cluster  
494 self-regenerating thanks to a "supercavitating effect" - as the piece flies extremely fast some atoms  
495 are pushed into the antigraviton cluster, and as they fuse in it they produce some antigravitons  
496 which replace the antigravitons lost as the contact of the matter of the object. This explains why  
497 fireballs (bolides), unlike meteors made of rocks, have a systematic tendency to aim at particular  
498 areas with a high density of matter : castles, geothermal areas with a dense magma pocket active  
499 below, dense industrial areas for instance (the area of Krasnoyarsk presents both a geothermal  
500 pocket and heavy industries, it attracted the object of the Tunguska event that confirms the huge

501 content of heavy actinids of fireballs with a megatonic nuclear explosion<sup>3</sup>, and the 2013 Cheliabinsk  
502 event is another example, the flash in the sky confirming as well fission, this time before contact  
503 with the soil, because of solar neutrons as it happened during daytime). The typical scission of  
504 fireballs at the end of their path (observed on the ground) can be related to the shape of Ultima  
505 Thule and to the idea that the supercavitating fireballs are atoms that were interrupted in their  
506 fission by the strength of the black hole eruption, keeping this atypical bi-hemispheric shape. It is  
507 simple to predict that these fireballs are constituted of extremely heavy actinids with a high cross  
508 section for fission and long half-life : in the line of known exotic atoms curium-247 fits the pattern  
509 but heavier atoms, unknown of the researchers on exotic atoms, might be also certainly a very  
510 strong option. The combination of the two points : scission at the end under the corroding forces of  
511 the atmosphere, and the actinide content, leads to a simple rational explanation for the destruction  
512 of the twin cities of Sodom and Gomorrah in the Ancient Testament.

513

514

## 515 Conclusion

516

517 There is no way gravitational waves could be predicted, in the future, with full certainty.  
518 Computation may lead to successful experiments yet it is impossible to claim we will have models  
519 good enough to ensure 100% confidence in the fact nuclear power plants could be shut down at the  
520 exact periods where neutron impacts have to happen. There will be always a risk, especially  
521 because of black matter and the limits it imposes on space imagery and monitoring. The option  
522 quickly drafted in this paper (deeply buried underground subcritical designs) is much safer for

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<sup>3</sup> In this case alpha radiation against light atoms from the ground certainly was the trigger at impact for the supercriticity from compression of the bolide.

523 future times to come and would allow still to use depleted uranium, transuranics and uranium mine  
524 tailings as energy source so as to eliminate the need for uranium mining and for the long term  
525 underground stockpiling of waste in closed repositories – already existing tunnels could even be  
526 recycled for the installation of such subcritical designs deep underground, at 500 meters depth in  
527 Onkalo for instance, with a large amount of biomass on top of the tunnel to complete the anti  
528 neutron bunker.<sup>4</sup>

529 Humans nevertheless should take into account fireballs and consider again the heavy developments  
530 that the current shape of the economic and military organization has produced.

531

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<sup>4</sup> As regards coolant the author never supports sodium for obvious reasons of security and would recommend helium for an efficient and extremely safe DU-burner subcritical design

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