

1 – Introduction:

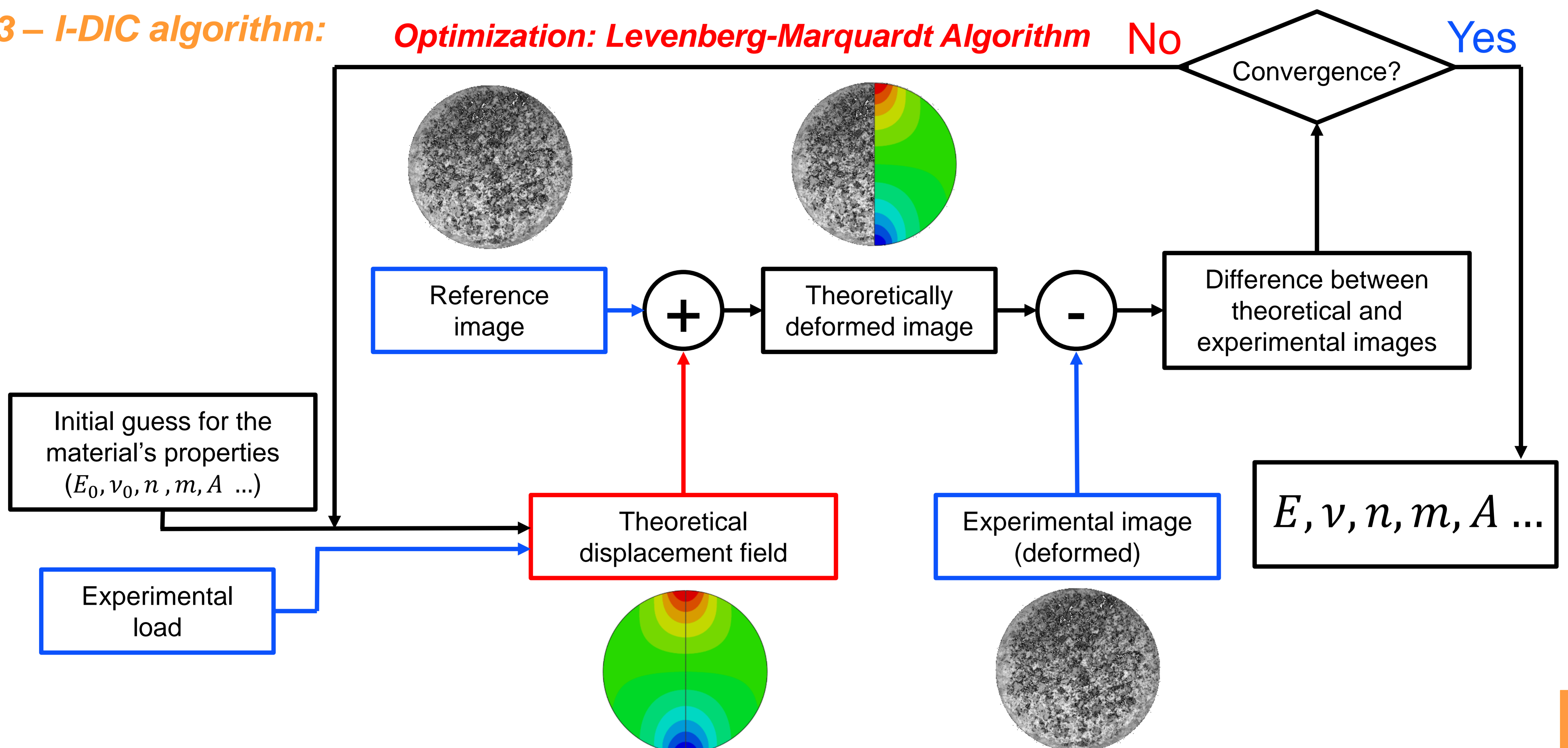
- The modelling of **refractory materials** at high temperatures requires the determination of the most suitable **mathematical models**
- Moreover, accurate models tend to require **complicated testing** for the determination of the **materials' parameters**
- Digital Image Correlation** techniques have been used to close the gap between complex materials' models and the determination of the required mechanical properties

2 – Objectives:

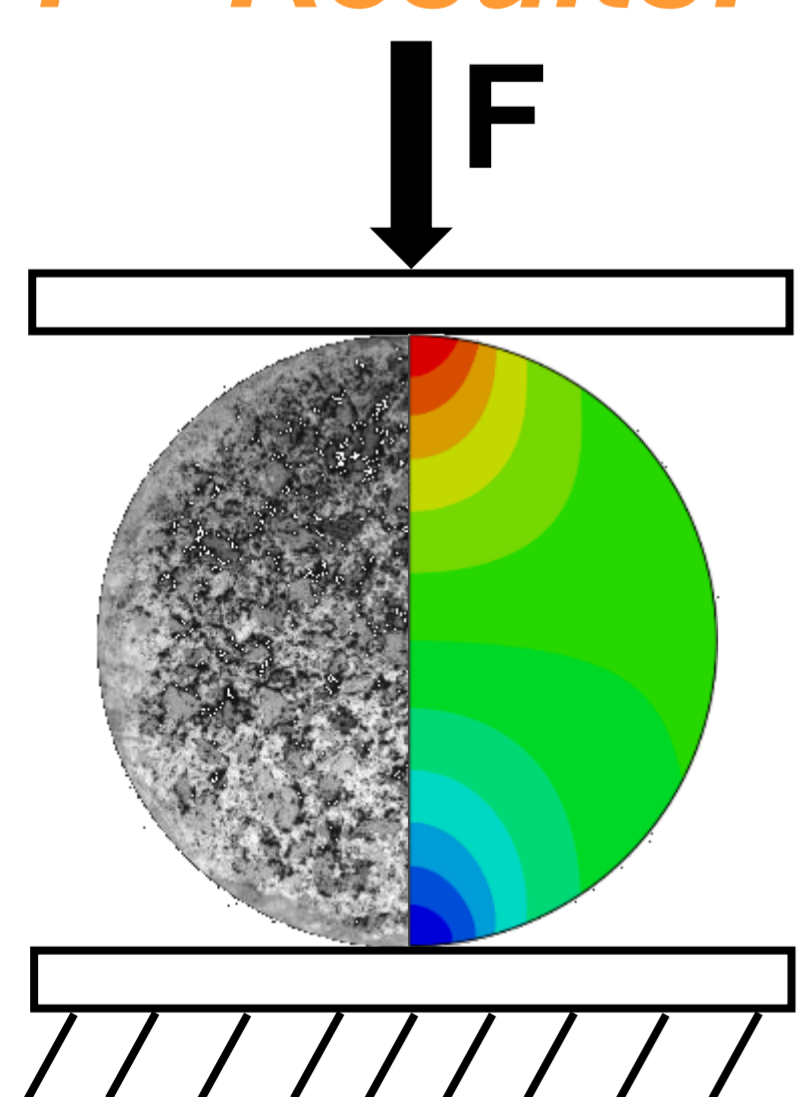
- This work intends to apply the I-DIC technique to the determination of **mechanical properties of refractories**
- Especially emphasis will be given to their **primary and secondary creep** behaviour at **high temperatures**
- It's expected to fully characterize the materials (tension, compression and shear) using a **reduced number of tests**, making use of the Brazilian test

3 – I-DIC algorithm:

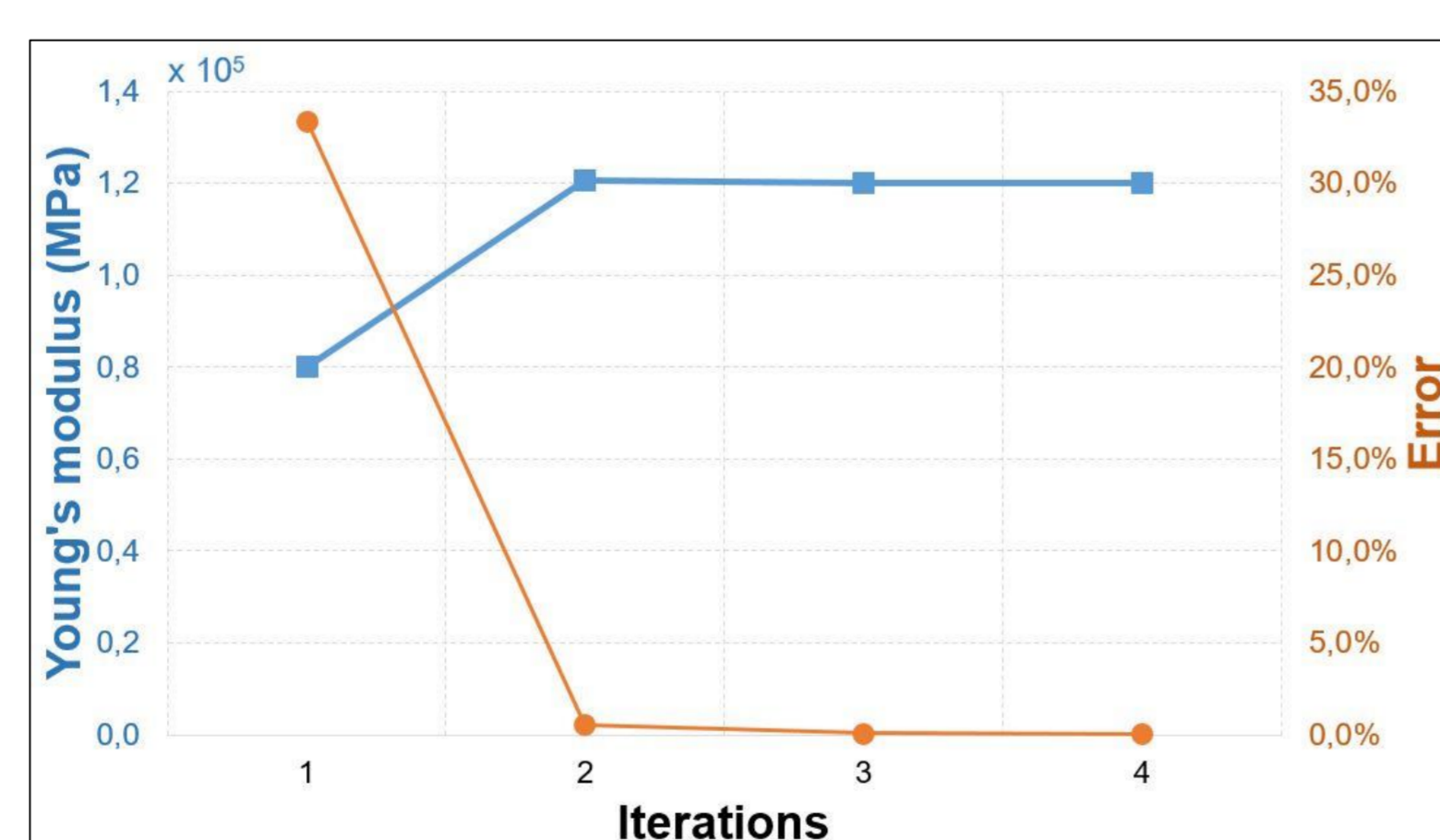
Optimization: Levenberg-Marquardt Algorithm



4 – Results:



Linear Elastic Isotropic Model



5 – Conclusions:

- The **I-DIC technique** is a convenient option to perform **inverse identifications**, and the robustness of the **optimization algorithm** related to it plays a decisive role in the obtained results
- For future works, the challenges of the **high temperature I-DIC** will be addressed, and the development of **innovative techniques** related to the images' quality is a priority

ESR Position 09

Supervisors & University

Acknowledgments



Lucas BREDER TEIXEIRA

Early Stage Researcher

mail: lucas.breder-teixeira@univ-orleans.fr

Eric BLOND, Thomas SAYET, Jean GILLIBERT



This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement no.764987

Consortium of 15 European Partners

