Electro thermal Flux-Flux cosimulation of a fuse

2D Multiphysics Summary

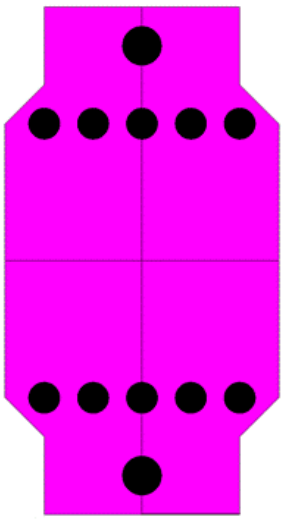
Introduction

This application note presents the co-simulation of a fuse with Flux 2D. To launch this co-simulation, two examples must be opened: "Electric" and Then "Thermal"

Keywords

Applications	Flux main functions	Post-processed quantities
• Electrical conduction • Transient thermal	• Co-simulation • Lineic boundary conditions	• Electric quantities, thermal • Joule losses

The studied device, represented in the figure below, is a fuse. The study represents the elevation of temperature linked to the conduction in the fuse. The fuse is composed of only one massive part, in which holes are drawn to modify the conduction



In practice

Open example = Open Flux + Run the pyFlux command file

- Recommended memory configuration (standard): 600 MiB Numerical + 50 MiB Character + 200 MiB GUI
- Computation time: t ~ 7 min [64 bit-16 Go RAM - 2.2 GHz]

Example 1: Electro-thermal co-simulation

The electro-thermal co-simulation links:

- Electric conduction: Joule losses computations in the fuse
- Transient thermal: shows the temperature elevation depending of losses calculated in the electric conduction

At the end of the co-simulation, we have:

- Temperature isovalues in the fuse
- Current density isovalues in the fuse