**Objective**

Quantify the temperature non-uniformity on the coolant side of heat sinks, for transient and non-uniform heat inputs.

**IMPACT**

- Full 3D temperature signature can be obtained for multiple arbitrarily placed heat sources on a substrate.
- Non-uniformity maps developed to illustrate realistic case studies.
- Identification of cases that lead to large non-uniformities, for design of heat sinks.

**Approach**

- Develop analytical 3D conduction solutions for any number of arbitrary heat inputs for a chip-on-substrate problem.
- Map the degree of spatial and temporal non-uniformity of the heat sink base as a function of prominent non-dimensional parameters like Biot number, duty cycle, etc.

**Publication**