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Cooling system optimization for a terahertz radiation detector via parametric analysis of the fluid-solid interaction problem

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Highlights

- Performed multi-objective optimization of the cooling system in a terahertz detector.
- Developed and numerically solved a nondimensional model of a fluid-solid interaction problem.
- Performed nondimensional parametric studies to find the optimum channel height/gap of the device.
- Examined the influence of inlet velocity, channel height/gap and heat input on system performance.
- Obtained the optimum channel height/gap that minimizes both fluid-temperature and solid-deformation.

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