

**HEAT SPREADING BY OSCILLATING FLOW IN A THIN CHANNEL
FILLED WITH LIQUID**

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ABSTRACT Thermal performance of a solid heat spreader and a pulse heat spreader filled with water has been numerically investigated. Both heat spreaders are in the thermally steady state at $t=0$. For $t>0$, a local heat source is removed and a flow oscillation, i.e. $u = A\sin(\omega t)$, is activated in the fluid region of the pulse heat spreader. The boundary conditions at the right and left ends are adiabatic and the bottom wall is also adiabatic except for the heat source. The convective heat transfer boundary condition is imposed at the top wall. The effects of the important governing parameters, such as the Reynolds number Re and the Strouhal number St on heat spreading are investigated in detail. The results indicate that heat spreading is substantially enhanced by increasing the Reynolds number Re and the Strouhal number St . The thermal performance for the pulse heat spreader is compared with that obtained for the solid heat spreader.