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**Digitized Heat Transfer** KAMRAN MOHSENI, PATRICK YOUNG, University of Colorado at Boulder — This presentation presents theoretical and numerical results describing digitized heat transfer (DHT), an active thermal management technique for high-power electronics and integrated micro systems. In digitized heat transfer discrete droplets are employed. The internal flow inside a discrete droplet is dominated by internal circulation imposed by the boundaries. This internal circulation imposes a new timescale for recirculating cold liquid from the middle of the droplet to the boundary. This internal circulation produces periodic oscillation in the overall convective heat transfer rate. Numerical simulations are presented for heat transfer in the droplet for both constant temperature and flux boundary conditions. The effectiveness of DHT for managing both localized temperature spikes and steady state cooling is demonstrated, identifying key parameters for optimization of the DHT method.

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