

NEAR-FIELD HEAT TRANSFER: A RADIATIVE INTERPRETATION OF THERMAL CONDUCTION

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ABSTRACT. It is shown in this article that the near-field radiative heat transfer can be interpreted as a conduction heat transfer due to the propagation of polaritons. We consider two situations. In the first one, two heated bodies at different temperatures are separated by a gap and in the second one a temperature gradient is imposed to a bulk material. In both situations, the radiative heat transfer is calculated by means of fluctuational electrodynamics. Asymptotic expressions of a thermal conductivity are obtained from the radiative heat transfer calculation. We interpret this conductivity as a consequence of the heat transfer by propagation and collisions of polaritons.