

Abstract Submitted
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Application of coupled mode theory on radiative heat transfer between layered insulating materials CHUNGWEI LIN, BINGNAN WANG, KOON HOO TEO, Mitsubishi Elec Res Lab — Coupled mode theory (CMT) provides a simple and clear framework to analyze the radiation energy exchange between reservoirs. We apply CMT to analyze the radiative heat transfer between layered insulating materials, whose dielectric functions can be approximated by the Lorentz oscillator model. By comparing the transmissivity computed by the exact solution to that computed by CMT, we find CMT generally gives a good approximation for this class of materials. The biggest advantage of CMT analysis, in our opinion, is that only the (complex) resonant energies are needed to obtain the radiation energy transfer; the knowledge of spatial profile of resonances is not required. Applications of CMT to thermophotovoltaic system will be discussed.

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