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Temperature dependence of the charge-density-wave gap in the rare-earth tritelluride compounds F. PFUNER, M. LAVAGNINI, ETH Zurich, J.-H. CHU, I.R. FISHER, Stanford University, L. DEGIORGI, ETH Zurich — The layered rare-earth tritellurides $R\mathrm{Te}_3$ (R= Er and Ho) host an unidirectional, incommensurate charge-density-wave (CDW) transition at $T_{CDW1} \sim 265$ and 280 K and a further transition to a bidirectional CDW state at $T_{CDW2} \sim 160$ and 120 K for the Er and Ho compound, respectively. We present optical reflectivity data collected as a function of temperature over a very broad energy interval, ranging from the far-infrared up to the ultraviolet. We extract the temperature dependence of the CDW gap and compare it with our previous results on the whole rare-earth series (R=La, Ce, Pr, Nd, Sm, Gd, Tb and Dy) as a function of chemical and externally applied pressure. We provide clear-cut evidence that upon destroying the CDW state with increasing temperature and pressure there is a progressive closing of the CDW gap excitation.

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