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Exploration of the pressure-induced superconducting phase in rare-earth tritellurides (RTe$_3$)[1] DIEGO A. ZOCCO, JAMES J. HAMLIN, M. BRIAN MAPLE, Department of Physics, University of California, San Diego, JIUN-HAW CHU, IAN R. FISHER, Department of Applied Physics, Geballe Laboratory for Advanced Materials, Stanford University — It has recently been reported that the low-dimensional rare-earth tritellurides RTe$_3$ (R = La-Nd, Sm, Gd-Tm) enter an unidirectional, incommensurate charge-density-wave (CDW) state when cooled below a temperature $T_{CDW1} \sim$ 450 - 250 K, which decreases with increasing rare earth atomic number, due to the effect of chemical pressure. For the heavier R (*i.e.*, Dy-Tm), a second CDW appears at $T_{CDW2} < T_{CDW1}$, orthogonal to the first one. We have recently found that the application of external pressure induces a superconducting (SC) state in TbTe$_3$ at low temperatures, coexisting with the two CDWs and the local moment rare-earth magnetism. In this talk, we present the results of experiments we have performed on these materials at high pressures and very low temperatures, to help develop an understanding of the origin of the superconducting state.

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