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Optical Excitation Spectrum in Ni- and Cu-doped $ZrTe_3$ CHIARA MIRRI, ADAM DUSZA, LEONARDO DEGIORGI, Solid State Physics Laboratory, ETH Zurich, CH-8093 Zurich, Switzerland, CEDOMIR PETROVIC, Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory, Upton NY 11973, USA, BROOKHAVEN NATIONAL LABORATORY COLLABORATION — We report on an optical study performed on Cu_xZrTe_3 and Ni_xZrTe_3 single crystals. $ZrTe_3$ was previously found to display a BCS-like CDW-gap opening in the optical spectra along the direction orthogonal to the Zr-chains and to undergo a filamentary superconducting transition below a T_c of about 2 K. The intercalation by Cu and Ni between the $ZrTe_3$ layers partially fills the CDW gap and induces bulk superconductivity coexisting with the CDW state below T_c. Here we show the effect of Ni and Cu intercalation on the reflectivity and optical conductivity above and below the CDW phase-transition temperature. Furthermore, we analyze the optical spectral weight, providing equivalent information in both compounds about the partial gapping of the Fermi surface and the overall redistribution of spectral weight across the CDW phase transition.

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