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Physical properties $FeSe_{1-x}Te_x$ single crystals TESFAY GEBRE, LUIS BALICAS, YAN XIN, JEFFREY WHALEN, National High Magnetic Field Lab, THEO SIEGRIST, Department of Chemical and Biomedical Engineering, 2525, Pottsdamer St. Tallahassee-FL, 32310 — Single crystals of $FeSe_{1-x}Te_x$ were synthesized by both optical floating zone and self-flux techniques. Crystals were characterized via EDX, x-ray scattering, magnetization and galvanometric measurements. We have found that these compounds are particularly resilient to the application of high magnetic fields. Upper critical fields as estimated through the WHH formalism indicate that these materials strongly surpass the weak coupling Pauli limiting field indicating that the shape of their phase diagram under field is essentially controlled by the Pauli effect. The evolution of the phase diagram as a function of doping and magnetic field will be presented.

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