

Abstract Submitted  
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**London penetration depth measurements in Ba(Fe<sub>1-x</sub>Ru<sub>x</sub>)<sub>2</sub>As<sub>2</sub> single crystals** RYAN GORDON, MAKARIY TANATAR, ALEXANDER THALER, RUSLAN PROZOROV, Department of Physics and Astronomy, Iowa State University and Ames Laboratory, Ames, IA — The variation of the in-plane London penetration depth with temperature,  $\Delta\lambda_{ab}(T)$ , has been measured in Ba(Fe<sub>1-x</sub>Ru<sub>x</sub>)<sub>2</sub>As<sub>2</sub> single crystals by using a tunnel diode resonator (TDR). The crystals were grown out of self-flux, with superconductivity stabilized for  $x > 0.2$  and the maximum  $T_c \approx 16$  K corresponding to  $x \approx 0.29$ . The substitution of Ru for Fe in this compound is particularly interesting because it is isovalent, so that no additional charge carriers are added by the Ru. The low-temperature penetration depth has been found to exhibit a power law dependence,  $\Delta\lambda_{ab}(T) \propto T^n$ , with an  $x$ -dependent exponent,  $n$ . Using the penetration depth data, the superfluid density has been constructed and compared to known theoretical models for different superconducting pairing symmetries and impurity scattering limits. These results will be compared to previous measurements on different iron-based superconductors.

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