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Penetration Depth and Isotope Effect in Highly Overdoped YBCO ANDREI BAIKALOV, YU-YI XUE, RU-LING MENG, Department of Physics and Texas Center for Superconductivity at the University of Houston, CHING-WU (PAUL) CHU, Texas Center for Superconductivity at the University of Houston, Lawrence Berkeley National Laboratory, Hong Kong University of Science and Technology — Magnetic penetration depth was measured for $Y_{1-x}Ca_xBa_2Cu_3O_7$ samples in the range from slightly to highly overdoped carrier concentrations covering Quantum Critical Point (QCP) doping level p=0.2. Together with oxygen isotope exchange experiment in progress, the data should indicate the role of phonons in understanding of the QCP phenomena. Separation of each sample onto different particle size powders along with appropriate model allowed us to extract temperature dependences for in-plane and out-of-plane penetration depth thus defining anisotropy coefficient behavior for the range of highly overdoped compounds.

Andrei Baikalov
Department of Physics and Texas Center for Superconductivity at the University of Houston

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