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Universal scaling relations in exotic superconductors S.V. DORDEVIC, The University of Akron, D.N. BASOV, University of California, San Diego, C.C. HOMES, Brookhaven National Laboratory — Universal scaling relations are of tremendous importance in science, as they reveal fundamental laws of nature. Several such scaling relations have recently been proposed for superconductors, however, they are not really universal in a sense that some important families of superconductors appear to fail the scaling, or obey the scaling with different scaling pre-factors. In particular, a large group of materials called organic (or molecular) superconductors are a notable example. In this paper we show that such apparent violations are largely due to the fact that the required experimental parameters were collected on different samples, with different experimental techniques. When experimental data is taken on the same sample, using a single experimental technique, organic superconductors, as well as all other studied superconductors, do in fact follow universal scaling relations.

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