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Thermal Conductivity of $YBa_2Cu_3O_7$ DALE R. HARSHMAN, Physikon Research Corp., JOHN D. DOW, Arizona State University — It is widely, but incorrectly, believed that the thermal conductivity of $YBa_2Cu_3O_7$ can only be explained in terms of a d-wave model. We show that an s-wave model of hole- pairing, combined with muon spectra that are observed to be s- wave, specific heat data with an observed zero-field linear-T term, superconductivity determined to be in the BaO layers, and non-superconducting CuO_2-plane bands describe the $YBa_2Cu_3O_7$ data better than any d-wave model. Unlike any d- wave model, the s-wave explanation is also consistent with the superconductivity of Cu-doped Sr_2YRuO_6 and Ba_2YRuO_6, at $\approx$49 K and $\approx$83 K, despite these compounds having no cuprate-planes, and the superconductivity of $GdSr_2Cu_2RuO_8$ and $Gd_{2-z}Ce_zSr_2Cu_2RuO_{10}$ occurring at $\approx$40 K, despite the fact that their cuprate- planes are either antiferromagnetic or weakly ferromagnetic. In all of these compounds, the superconducting layer is the SrO or BaO layer. The errors which led to the widely believed erroneous concept of cuprate-plane superconductivity are discussed.

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