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Superconducting Enhancement in Nickel-Pnictide Superconductors CHRIS ECKBERG, DANIEL CAMPBELL, TYLER DRYE, HYUNSOO KIM, PETER ZAVALIJ, PHIL PICCOLI, University of Maryland, JEFF LYNN, NIST Gaithersburg, JOHNPIERRE PAGLIONE, University of Maryland — While the relationship between phase criticality and superconductivity is understood in several conventional systems, open questions remain in many families of high Tc superconductors, wherein structure and magnetic order are closely linked. Utilizing superconducting BaNi2As2 we are able to explore the behavior of superconductivity near a structural instability decoupled from magnetic ordering. Here we present the details and results of both Sr and Co substitutional studies in (Ba,Sr)Ni2As2 and Ba(Ni,Co)2As2, respectively, comparing the evolution of structural and superconducting phases in each case. The resulting phase diagrams as well as the possible mechanism for superconducting enhancement in these systems will be discussed.

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