Abstract Submitted
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Chemical Pressure Effect and Dimer Formation in (Ba,Sr)Ni_2As_2 Solid Solutions[1] TYLER DRYE, SHANTA SAHA, JOHNPIERRE PAGLIONE, Center for Nanophysics and Advanced Materials, Department of Physics, University of Maryland-College Park — Although both $BaNi_2As_2$ and $SrNi_2As_2$ form in $ThCr_2Si_2$ structure, these materials display very different behaviors, owing in part to an important structural difference: while the Sr compound exhibits As-As bonds between layers, the Ba compound lacks these interlayer bonds. Thus, substitution of Sr into $BaNi_2As_2$ produces a positive chemical pressure effect on the system that pulls the NiAs layers closer together and towards As-As dimer formation. We will present the resulting phase diagram as determined by x-ray, chemical composition, electrical resistivity and magnetization measurements.

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