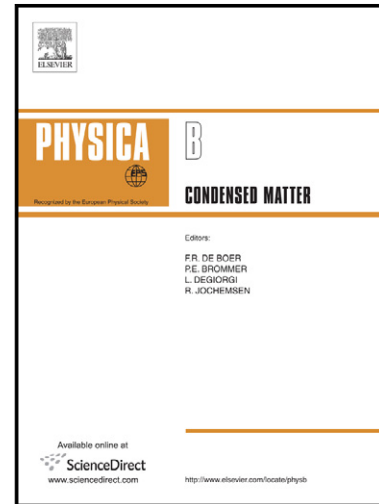


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**Study of antiferro - ferromagnetic phase coexistence in Ta doped HfFe<sub>2</sub>****Pallab Bag<sup>1\*</sup>, Sanjay Singh<sup>2</sup>, P.D. Babu<sup>3</sup>, Vasudeva Siruguri<sup>3</sup> and Rajeev Rawat<sup>1</sup>****<sup>1</sup>UGC-DAE Consortium for Scientific Research, University Campus, Khandwa Road,  
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**Abstract:** First order antiferromagnetic (AFM) to ferromagnetic (FM) transition in Hf<sub>1-x</sub>Ta<sub>x</sub>Fe<sub>2</sub> with  $x \sim 0.225$  compounds was studied by resistivity, magnetization and X-ray diffraction (XRD) measurements at low temperature. Temperature and magnetic field dependent magnetization measurement show path dependent FM phase fraction at 5 K for  $x = 0.225$ . XRD measurements at 15 K show coexisting AFM and FM phases for this composition with  $\sim 0.9\%$  unit cell volume difference of FM and AFM phase.

**Keywords:** Magneto-structural transition, Iso-structural transition, Phase coexistence, Magnetic glass, Kinetic arrest.

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