Extremely Large Magnetoresistance in Bi$_{0.96}$Sb$_{0.04}$ SUDESH SUDESH, PAWAN KUMAR, SATYABRATA PATNAIK, School of Physical Sciences, Jawaharlal Nehru University, New Delhi-110067, India — Recent experimental evidence for Weyl fermions in topological semimetals has attracted considerable attention. These materials are three-dimensional analogue of graphene. The present work is motivated by the recent prediction of Weyl semi-metallic phase in Bi$_{1-x}$Sb$_x$ alloys. In this paper we present the electronic transport properties studied under high applied magnetic fields in Bi$_{0.96}$Sb$_{0.04}$ alloys. The sample exhibits extremely high magneto-resistance; MR(5 K, 8 T) = 9.810$^4$ %. This value is comparable to the MR observed in recently discovered other members of these emergent materials. Most importantly, this composition shows large MR at room temperature, MR (300 K, 8 T) = 435%, which is almost twice to that observed in Dirac semimetal Cd$_3$As$_2$ (= 200 % at 14.5 T) and Weyl semimetal NbP (= 250% at 9 T). We also discuss single crystal growth techniques as well as Hall and Shubnikov de Haas (SdH) oscillation data. References [1] S. Singh et.al, arxiv:1512.00863v2 (2015). [2] C. Shekhar et.al, Nat. Phys.11 645–650 (2015). [3] Z. Wang et.al, Phys. Rev. B 88 125427 (2013).

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