Abstract Submitted
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Determination of melting curves of metals from resistance changes in the LHDAC[1] ABHISEK BASU, REINHARD BOEHLER, Geophysical Laboratory, Carnegie Institution of Washington — A new method for determining melting temperatures of metals at high pressure is presented. The resistivity of laser-heated wires shows strong, discontinuous behavior both for solid-solid transitions and melting. In this technique we have used the split gasket method[1], where the two gasket halves act as electrical leads for metal wires with dimensions 10 x 25 micron. Both alumina powder and KCl were used as pressure media. The wires were heated with an ytterbium fiber laser (λ = 1070 nm, TEM_{00} mode, CW, IPG-Photonics). Changes in the electrical resistance of the sample wire were measured by the two-terminal method using source meter (Keithley 2400) under a constant direct current of 100 mA. Iron was chosen as the test case for this new technique. Melting data up to 1 Mbar and 3200 K are reported showing a significant deviation from recently reported X-ray measurements[2]. Our new measurement for iron show melting temperature of iron consistent with previous findings of Boehler (1993)[3] and Aquilanti *et al.* (2015)[4]. References: 1) R. Boehler, Geophys. Res. Lett. **13**, 1153 (1986). 2) S. Anzellini *et al.*, Science **340**, 464 (2013). 3) R. Boehler, Nature **363**, 534 (1993). 4) G. Aquilanti, PNAS **112**, 12042 (2015).

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