Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Effect of Subelement Size, Strand Size and RRR on Stability of RRP Nb3Sn Wires EMANUELA BARZI, SIMONE MOIO, ALEXANDER ZLOBIN, Fermi National Accelerator Lab, SUPERCONDUCTOR R&D TEAM — Using ample statistics gathered from state-of-the-art Nb3Sn strands of different designs and sizes developed by Oxford Superconductor Technology (OST), the effects on the strand current density of subelement size, Residual Resistivity Ratio (RRR) of the copper matrix, and strand size were measured, analyzed and compared with the predictions of a stability model. The data confirmed a strong dependence of the instability current density on the subelement size, but also hinted at effects of non-uniform current distribution in the wire. The data also show that the instability current relates so weakly to RRR that it is possible to cleanly identify a common instability behavior as a function of subelement size and of strand size despite an ample range of RRR. This analysis was performed both at 4.2 K and 1.9 K.

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Date submitted: 26 Dec 2012 Electronic form version 1.4