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Yosuke Kubota* (yosuke.kubota@riken.jp), 2-1 Hirosawa, Wako-shi, Saitama 351-0198, Japan. *Equivalence of definitions of the relative higher index map.*

In 2015, S. Chang, S. Weinberger and G. Yu introduced a new index theoretic invariant for a manifold with boundary called the relative higher index, which takes value in the K-group of the mapping cone of the C*-algebras of fundamental groups. It is an obstruction of the existence of positive scalar curvature metric collared at the boundary. In this talk we discuss the definition of this relative higher index map. The original work of Chang–Weinberger–Yu is based on the coarse index theory (in particular, the use of Yu’s localization algebra is essential). After that, R. Deeley and M. Goffeng also give an alternative definition of the relative higher index based on the Baum–Douglas geometric K-homology and the higher Atiyah–Patodi–Singer index. In this talk, we introduce a new definition of the relative higher index map as a relative analogue of the Mishchenko–Fomenko index pairing. It has an advantage that we can define the dual relative higher index map. Our main result is that this Mishchenko–Fomenko relative higher index coincides with both the Chang–Weinberger–Yu and Deeley–Goffeng relative higher index maps. (Received January 24, 2019)