1165-57-87 **Langte Ma*** (lma@scgp.stonybrook.edu), 100 Nicolls Rd, Simons Center for Geometry and Physics, Stony Brook, NY 11794. *Torus Signature and Periodic Rho Invariant.* Preliminary report.

Let $T \subset X$ be an essentially embedded torus in a homology $S^1 \times S^3$. There are two approaches defining an equivariant signature invariant for the pair (X, T): one introduced by Echeverria as the signed count of degree zero singular instantons; the other given by Ruberman as the the rho invariant of the cross-section of the 0-surgered manifold of X along T. Both invariants recover the Levine-Tristram signature in the case of a product $S^1 \times (Y, K)$ with $K \subset Y$ a knot in an integral homology sphere. We show that both invariants are equivalent under the assumption that the cross-section of X can be chosen to be a rational homology sphere. The proof is to relate both invariants to the periodic rho invariant of the ASD DeRham operator. (Received January 12, 2021)