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**Simon Thomas\*** ([simon.rhys.thomas@gmail.com](mailto:simon.rhys.thomas@gmail.com)), Mathematics Department, Rutgers University, 110 Frelinghuysen Road, Piscataway, NJ 08854. *The isomorphism and bi-embeddability relations for countable torsion abelian groups.*

In this talk, I will discuss the isomorphism  $\cong_{TA}$  and bi-embeddability  $\equiv_{TA}$  relations on the space of countable torsion abelian groups. As I will explain, the bi-embeddability relation has a strictly simpler complete invariant than the isomorphism relation. Thus it is somewhat counterintuitive that  $\cong_{TA}$  and  $\equiv_{TA}$  turn out to be incomparable with respect to Borel reducibility. However, under a relatively mild large cardinal assumption, we obtain the intuitively correct result if we replace Borel reducibility by  $\Delta_2^1$  reducibility. This is joint work with Filippo Calderoni. (Received September 06, 2017)