# The global structure of countable equivalence relations

Luca San Mauro

Vienna University of Technology, Austria

*This is joint work with U. Andrews and D. Belin.*

The complexity of equivalence relations received much attention in the literature. The main tool for such endeavour is the following reducibility: given equivalence relations $R$ and $S$, $R$ is *computably reducible* to $S$ if there is a computable function $f : \omega \to \omega$ that injectively maps $R$-classes to $S$-classes. So far the systematic study of $c$-degrees has been limited to equivalence relations of low (i.e., c.e. or $\Delta^0_2$) complexity.

In this work, we initiate the study of **ER**, the degree structure generated by computable reducibility on *all* equivalence relations with domain $\omega$. We prove that the first-order theory of **ER** is as rich as possible, being computably isomorphic to second-order arithmetic.