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**Anush Tserunyan\*** ([anush.tserunyan@gmail.com](mailto:anush.tserunyan@gmail.com)). *Finite index pairs of countable Borel equivalence relations.*

Motivated by the question of whether finite index extensions of countable treeable equivalence relations are themselves treeable, we investigate finite index pairs  $(E, F)$  of nested countable Borel equivalence relations in general and give a characterization of the case when  $E$  is normal in  $F$  (in the measurable setting). Then we focus on the case when  $E$  is treeable and derive a converse to a theorem of Jackson-Kechris-Louveau stating that the orbit equivalence relations induced by free Borel actions of virtually free groups are treeable. Finally, we present a natural example of a universal treeable-by- $n$  equivalence relation, which one could hope to show is not treeable, thus giving a negative answer to the above question. (Received August 13, 2013)