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Tolga Karayayla* (tkarayay@math.upenn.edu). *Classification of Automorphism Groups of Rational Elliptic Surfaces*. Preliminary report.

In this work, I give a classification of automorphism groups of relatively minimal rational elliptic surfaces with section according to the configuration of singular fibers on the surface. The main result is a list of groups for each configuration of singular fibers such that each group in that list is the automorphism group of a rational elliptic surface with the specified singular fibers. Possible configurations of singular fibers on rational elliptic surfaces have been worked out by Persson and Miranda, there are 279 of them. The Mordell-Weil groups (the group of sections of the elliptic surface) have been classified by Oguiso and Shioda. The Mordell-Weil group depends on the configuration of singular fibers. In my work I show that the automorphism group of a rational elliptic surface is the semi-direct product of its Mordell-Weil group and the subgroup of automorphisms preserving the zero section. In this talk I will outline the ideas and the techniques I used for determining this subgroup for each configuration of singular fibers (Received January 17, 2011)