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Modification of the Fermi Surface of a Ferromagnetic Metal at a Metamagnetic Transition: Shubnikov de Haas Effect in High Quality Single Crystals of $Sr_4Ru_3O_{10}$ YOUN-JUNG JO, LUIS BALICAS, National High Magnetic Field Lab, NAOKI KIKUGAWA, School of Physics and Astronomy, University of St. Andrews, St. Andrews, Fife KY16 9SS, United Kingdom, KEVIN STORR, Department of Physics, Prairie View A&M University, Prairie View, Texas 77446-0519, USA, ANDREW MACKENZIE, School of Physics and Astronomy, University of St. Andrews, St. Andrews, Fife KY16 9SS, United Kingdom, ZHIQIANG MAO, Department of Physics, Tulane University, New Orleans, Louisiana 70118, USA — We performed a detailed electrical transport study at low temperatures and high magnetic fields in high quality single crystals of the tri-layered ferromagnetic metal $Sr_4Ru_3O_{10}$. We observed Shubnikov de Haas oscillations for several frequencies. The most prominent orbits have two-dimensional character and display frequencies $F_\alpha = 9959$ T, $F_\beta = 3949$ T, $F_\gamma = 1877$ T corresponding respectively to 73.5, 29.2 and 13.9% of the area of the orthorhombic first Brillouin zone (FBZ). Several additional orbits, mostly with frequencies below 2 kT have also been identified, whose spectral weight and frequencies are shifted by a metamagnetic transition induced by an in-plane field component.

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