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Control and Calibration of a Staubli RX130 Robotic Arm for Construction of Surface Current Coils PATRICK VANMETER, CHRISTOPHER CRAWFORD, EMRE GULER, MARIO FUGAL, BRADLEY IRVIN, University of Kentucky — Precision low energy neutron experiments require extremely uniform magnetic fields for manipulating the neutron spin. Such fields can be generated with surface current coils—precision 3-dimensional printed circuits. We are developing a facility to etch out these circuits on copper-plated curved forms using a high-speed spindle attached to the end-effector of a Staubli RX130 six-axis robotic arm. We describe our mathematical model of the robotic links and the software system we designed to control the motion of the arm and to prevent collisions during actuations. We developed a calibration procedure to achieve accuracy of 30 microns in the position of drill.

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