Contour surgery in multiply-connected domains RHODRI NELSON, Kyoto University — In this talk we present a new method for computing the motion of vortex patches in multiply connected domains. The method works by first solving for the velocity field owing to an unbounded vortex at appropriate points on the boundaries (as if the boundaries were not present). Following this, a suitable modified Schwarz-problem is solved to give a 'correction' velocity such that the sum of this field and that due to the 'unbounded' vortex satisfy the no-normal flow boundary condition on all boundaries present. For flows in which complex distributions of vorticity evolve, the algorithm performs contour surgery (allowing vortices to split or merge) to allow accurate, long time integration of such systems.