Redesign of the 90_ Analysing Magnet of the ISIS H Ion Source Using Finite Element Modelling - C.P. BAILEY, RAL - The magnetic field strength, uniformity and stray components of the 90_ analysing magnet of the ISIS Penning H ion source, have been measured and modelled. Both show that at the design field the required steering is not achieved at the design energy. It is possible to extract from the source at an energy that allows the beam to be bent through 90_, but there remains a residual offset in position. The fringe fields which extend a substantial distance from the magnet causing further bending and also aberrations. Modifications of the design have been obtained using the OPERA finite element code. The 90_ bend at the design energy is achieved by shortening the arc length of the poles together with the inclusion of a tubular shield of high permeability material at the exit of the poles. The inclusion of the tube also results in significant control of the fringe fields, removing unwanted steering and reducing aberrations. With the new design the beam exits parallel to the axis with a small displacement that can be compensated by suitable alignment to the downstream accelerator.