

A Comparison of 4-Rod and 4-Vane RFQ Fields,
A. LETCHFORD, RAL - A 202.5 MHz, 665 keV, H- 4-rod Radio Frequency Quadrupole, designed by the Institut fur Angewandte Physik at Frankfurt University, will replace the existing pre-injector on the ISIS Spallation Neutron Source at RAL. The 4-rod RFQ offers some advantages over 4-vane designs in terms of RF properties and ease of manufacture. The rod shaped electrodes, however, give cells whose pole tips have constant centre of curvature rather than the constant transverse radius of curvature which is usual for the pole tips of vane electrodes. In order to investigate the effects of this difference in geometry, new codes have been written to calculate a multipole expansion of the RFQ potential and simulate the beam dynamics in the resonating field. Results are presented comparing similar 4-rod and 4-vane designs. For the 4-vane design a comparison is made with the Los Alamos code PARMTEQM.