SPIN OFF : MULTIPIN CRYOGENIC COAXIAL FEEDTHROUGH

Non-magnetic multi-pin coaxial vacuum feedthrough system for cryogenic applications upto 4K

A compact non-magnetic feedthrough made of epoxy resin and capable of maintaining vacuum leak tightness over a wide temperature range (300 K - 4 K) has been developed. It is equipped with 15 electrical pins and three 50 Ω coaxial lines. The feedthrough has been designed to apply a high voltage (up to 5 kV) and transmit radio-frequency signals for operating a Penning trap over a wide temperature range (300 K - 4 K). The characteristic impedances of the coaxial lines have been measured at 300 K and 77 K and found to remain ~50 Ω over the frequency range (10 - 80 MHz). Details of fabrication and characterisation can be obtained in Ref.-1.

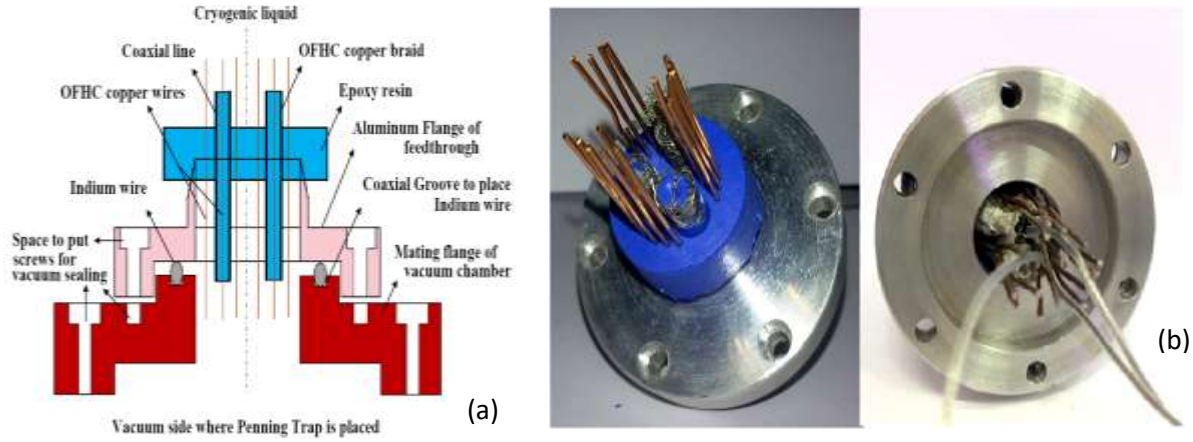

FIG. 1. (a) A schematic drawing of the feedthrough and the mating angle of the vacuum chamber (not drawn to scale) (b) Photograph of both sides of the fabricated non-magnetic cryogenic vacuum feedthrough with 15 electrical pins and three 50 Ω coaxial lines.

Ref.-1: Fabrication of non-magnetic multi-pin coaxial vacuum feedthrough system for cryogenic applications, A. K. Sikdar, J. Nandi, P. Das, and A. Ray, Rev. Sci. Instr. **91**, 074707 (2020)