

DESIGN OF DRIVE CIRCUIT FOR PIEZO WALKER FOR CONFIGURABLE SLIT UNIT

We at TIFR, have initiated the development of a Multi-Object Infrared Spectrometer (MOIS) using a configurable multi-slit arrangement for a large aperture Indian optical/infrared telescope. In order to retain flexibility, avoid design and operational issues involved in using focal plane masks for multi-object spectroscopy we present here the first design concepts for the Configurable Slit Unit (CSU) that will be used to place multiple slits at different positions on the sky. The CSU simultaneously displaces bars across the FoV of the telescope to mask unwanted light so that a rectangular slit is formed at any desired position in the focal plane by positioning two opposing bars. The two opposite bars need to be independently controllable from either side so as to achieve any slit width opening as required during observation so that any slit width right from fully closed to fully open imaging field can be achieved. For infrared observations the entire mechanism has to be operational at cryogenic temperatures. We are currently working on a preliminary design for the CSU based on piezo-walkers to achieve the linear movement of the slits. In this talk I will present an overview of the CSU and specifically the microcontroller based drive circuit that we have designed to control the motion of the piezo-walkers accurate to 2.5 micron.