§13. Soft X-ray Space and Time Resolving Polychromator

Ishiguro, E., Mimura, M. (Dept. Appl. Phys. Osaka City Univ.)
Yamashita, K. (Dept. Phys. Nagoya Univ.)
Kondo, K. (Kyoto Univ.)
Morita, M., Sato, K.

The soft X–ray polychromator which permit us measurements of spacial distribution of soft X–ray emissions of impurities in a high temperature plasma is under construction. The principle of the plolychromator is basically a type of the Rowland circle mount with a spherical diffraction grating. Fig.1 shows the top and side views of the polychromator. A long curved entrance slit and a horizontal slit which locates between the grating and detector make a spatially resolved measurement of a large plasma of LHD possible. A microchannel plate whose surface is tangential to the Rowland circle is used as a two dimensional detector for images of various wavelengths. The detector chamber which is connected with the grating chamber by a bellows is movable to choose the wavelength region. One of three incident angles 88,5°, 88° and 87.5° to the grating can be also chosen by moving the grating holder. A laminar grating is used:the radius of curvature of 10m, the groove density of 1600 gr/mm and groove depth of 60 Å. The efficiencies of the grating coated with a gold film of 300 Å thickness were reported elsewhere[1].

The instrument shown in Fig.1 has been completed in the fiscal year of 1993 and the optical alignment of the polychromator now started. The next step is to construct the image transfer system from MCP to Charge Coupled Device and a rapid data acquisition system.

Reference
1)Ishiguro,E.,Mimura,M.,Yamashita,K.,Kondo, K., Koeda,M.,Nagano,T.,Sano,K.,Morita,S. and Sato,K. Ann.Rep.NIFS,(Apr.1992–Mar.1933)70

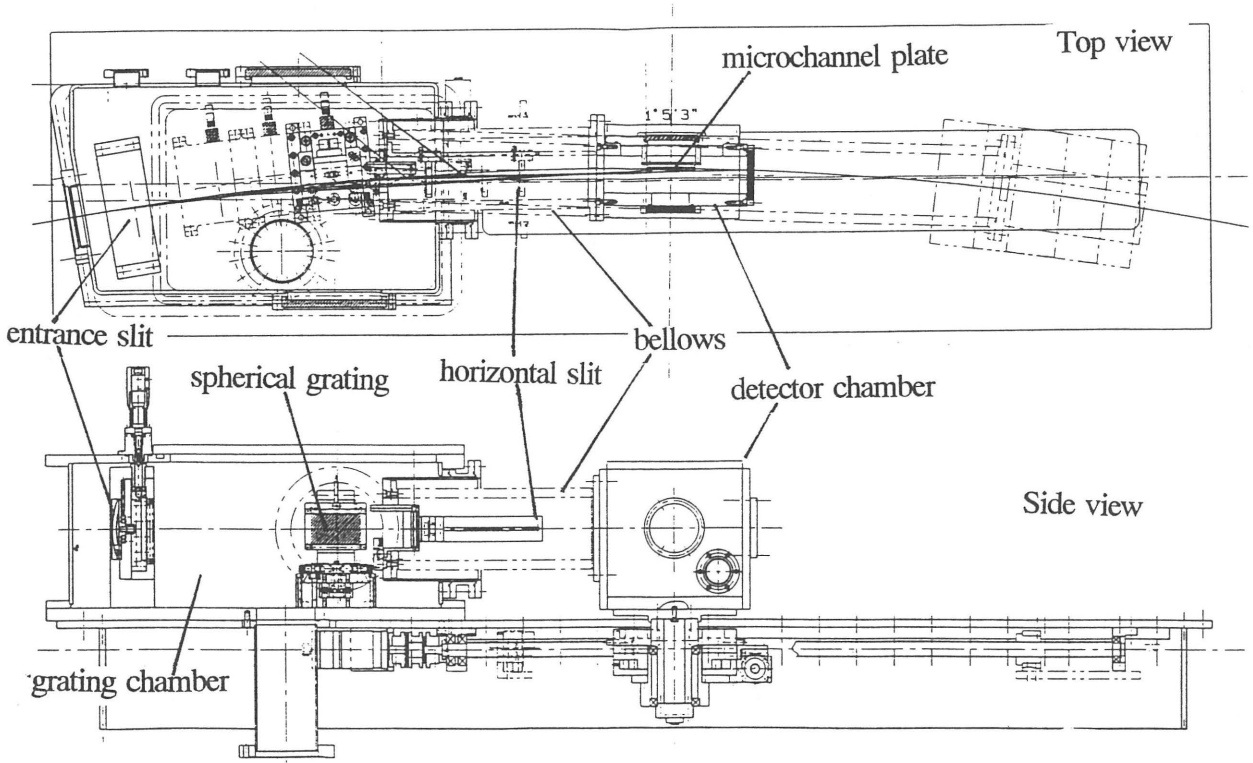

Fig.1. Schematic diagram of Soft X–ray Space and Time Resolving Polychromator