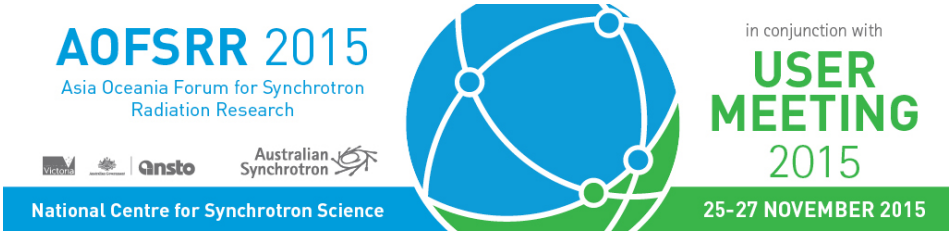

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Mechanical design of a various included angle Hetterick style monochromator covering tender X-rays

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A soft X-ray monochromator covering, so called, tender X-rays is realized with grating optics. The monochromator is composed of two reflection optics of a deflection mirror and a grating and they are configured to work at highly grazing incidence angles to guarantee moderate reflectivity even in the tender X-ray energy range. By the limitation of grazing incidence angles, the energy scan should be also completed within the highly limited rotation range of grating angle, which gives us very tight mechanical tolerances for the angles of the deflection mirror and the grating. The problem is solved by combining nano-motors and a special pivot. The various included angles on the grating is made by an off-axis rotation of the deflection mirror. In order to minimize the size of the entire chamber, the distance of the rotation axes is designed as small as a few millimeters. In this presentation, we would like to show the design details and test results.

Keywords

monochromator, tender, grazing, pivot, nano-motors, grating, optics,beamline,Hetterick

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