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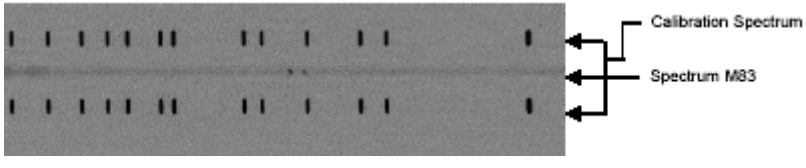
Spectrometric study of Galaxies and Nebulas

Although the spectrometric study of stellar objects is familiar to the world, in Sri Lanka we have no first hand experience on this. The present study was focused to find receding speeds and chemical composition of deep sky objects like Galaxies and Nebula using the 45 cm GOTO reflector telescope mounted at the Arthur C. Clarke Institute of Modern Technology in Katubadde, Sri Lanka. The experiment was conducted during the period December 2001 to March 2002 on days with clear night skies.

Spectrums of M31, M49, M83, M104 galaxies and Orion & Eschimo nebulas were obtained using a spectrograph with dispersion 90 and a ST-7 CCD camera with pixel dimension 99 and number of pixels 765, attached 0/*Ammm*µX570. to the telescope. CCDOPPS, a Microsoft window based software and IRAF, a LINUX based software were used for image processing.



Due to high pollution prevailed in the area, out of the six stellar objects only the M83 galaxy and Orion nebula gave identifiable clear spectrums. Calculations were made using Doppler shift associated with H I and N II lines identified in the M 83 spectrum. The receding speed of the galaxy was found to be 563 km/s and this value is in agreement with the results presented by Anglo-Australian observatory.

In the Orion nebula, ionized elements of H , C , O , N , S , Ne , Cl , Ar are observed. He and F lines were not detected and this may be due to shorter exposure time limited by the tracking system of the telescope.