X-Ray Astronomy Laboratory

X-Ray Astronomy Laboratory, X-ray binaries are luminous sources, which harbor neutron stars or black holes. Study of these sources is a crucial step towards an understanding of the high-energy processes that are active in the Universe. The X-ray emission arises from the inner most region of an accretion disk around the compact object. An important diagnostic of the system is their UV emission which could arise from the X-ray irradiated outer regions of the disk. This simple interpretation implies that the UV emission should be directly correlated with the X-ray one. However, earlier studies have indicated that the behavior of these systems is more complex. An obvious reason for this could be that the structure of the outer accretion disk is altered by the X-ray irradiation. We have undertaken a detailed theoretical analysis of the structure of an X-ray irradiated disk and will then subsequently apply it to understand the complex behavior of the UV and X-ray emission of these sources. An important aspect of this study will be that it will lay the foundation for development of the technical know-how to conduct further research using ASTROSAT, which will provide for the first time simultaneous X-ray and UV coverage of the sources from the same satellite. For undertaking such study a laboratory facility has been started in the Department of Physics to monitor and download the data from different satellites so as to work out on the detailed analysis of various X-ray sources.