

A small mission featuring an imaging x-ray polarimeter with high sensitivity

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#### Abstract

We present a detailed description of a small mission capable of obtaining high precision and meaningful measurement of the X-ray polarization of a variety of different classes of cosmic X-ray sources. Compared to other ideas that have been suggested this experiment has demonstrated in the laboratory a number of extremely important features relevant to the ultimate selection of such a mission by a funding agency. The most important of these questions are: 1) Have you demonstrated the sensitivity to a polarized beam at the energies of interest (i.e. the energies which represent the majority (not the minority) of detected photons from the X-ray source of interest? 2) Have you demonstrated that the device's sensitivity to an unpolarized beam is really negligible and/or quantified the impact of any systematic effects upon actual measurements? We present our answers to these questions backed up by laboratory measurements and give an overview of the mission.