

Title: "Cal X-1, a Pioneer mission for absolute in-orbit flux calibration for current and future X-ray observatories"

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Abstract: "X-ray astronomy missions are now making observations capable of answering fundamental physics and cosmology questions. However, those studies are often limited by lack of absolute X-ray flux calibration; the most powerful X-ray observatories reveal discrepancies in the source fluxes at the 10-20% level. These discrepancies are plausibly related to changes in the instrument performance between the ground calibration and the orbit. We propose to overcome this problem by establishing "standard candles" in the X-ray sky. Our Cal X-1 mission, a Pioneer concept, will consist of 2 small satellites flying in tandem. One will have an X-ray telescope and the other, a pair of absolutely-calibrated X-ray sources ($E=1.5$ keV and 6 keV). The telescope will ping-pong between the source satellite and several well-chosen constant celestial sources, determining the accurate fluxes of those sources and turning them into standard candles for all other X-ray observatories, current and future."