

DISCOVERY OF FK COMAE AND RS CVn SYSTEMS BY OBSERVATION OF THEIR
X-RAY EMISSION

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We are currently working with a statistically complete, unbiased sample of 125 x-ray-bright stars which were serendipitously detected by the Einstein Observatory Medium Sensitivity Survey (MSS). A program of optical spectroscopy and photometry is currently underway to measure radial velocities, distances, and such stellar parameters as rotation, temperature, surface gravity, metallicity, chromospheric activity, and age and to correlate them with absolute x-ray luminosity. So far, the majority of the sample (which was defined at $|b^{II}| > 20^{\circ}$) appears to be composed of either flare stars (e.g. dMe, dKe) or active binary systems (e.g. cataclysmic variables, RS CVn, W UMa).

We have already identified six new RS CVn candidates. These stars exhibit rapid rotation, strong Ca II H & K emission, and are binaries. We also have two such stars which show no evidence of being binaries. These are possible candidates for the class of FK Comae stars. This class of star is rare because it represents a relatively short phase in the evolution of a star: the moment at which the two cores of a contact binary coalesce to form a single, rapidly rotating star. In this paper, we discuss the x-ray characteristics of RS CVn and FK Comae stars.

In searching for new candidates for the RS CVn and FK Comae classes, the established method is to search objective prism plates for Ca II H & K emission objects. As demonstrated by this sample of stars from the Einstein MSS, one can easily find candidates for these classes of stars by looking at stellar objects with high f_x to f_v ratios. Unfortunately, at the moment it is more economical to take objective prism plates than it is to put x-ray telescopes into orbit.

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