The Winds and Flares of Proxima Centauri

B.J. Wargelin and J.J. Drake (*Smithsonian Astrophysical Observatory*)

Abstract

With one or two exceptions, existing measurements of stellar winds do not extend below a few times $10^{-10} M_{\odot}$/year—four orders of magnitude higher than the solar mass loss rate—and only apply to high-mass O and B stars, red giants, and supergiants. In recent work we suggested that observation of distinctively profiled X-ray halos arising from charge transfer between highly-charged ions in stellar winds and neutral gas in the surrounding interstellar medium can be used to study the winds and astrospheres around nearby dwarf stars. In the first application of this idea, we have deduced an upper limit for the mass loss rate of the nearby M dwarf Proxima Centauri based on two ACIS-S observations totaling 58 ksec. Using pulse height spectra, we have also obtained an estimate of Prox Cen's coronal metallity and have examined some properties of a prominent flare that occured during the observations.

CATEGORY: NORMAL STARS AND WHITE DWARFS