Optical and X-ray observations of accretion phenomena in magnetic cataclysmic variables

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The magnetic cataclysmic variables (MCVs) are short-period close-binary systems, in which a late-type main-sequence star transfers mass to a magnetized white dwarf. Depending on the field strength and the accretion torque, the white dwarf is either freely spinning (intermediate polars (IPs or DQ Her stars) or synchronized with the binary orbit (polars or AM Her systems). In IPs, accretion may occur through a magnetically disrupted disk and/or directly from the stream. Similarly to polars, the accreting matter is finally funneled to the magnetic polar regions above which a shock may form and part of the kinetic energy is released as thermal bremsstrahlung. The optical continuum is dominated by cyclotron radiation from one or two structured accretion spots in the vicinity of the magnetic poles of the white dwarf. These systems, therefore, serve as ideal plasma laboratories in which the radiative conversion of accretion energy can be studied in great detail (e.g. Reinsch *et al.* 1994, Burwitz *et al.* 1996a), and quantitatively compared with accretion theory (e.g. Woelk and Beuermann 1992, Woelk and Beuermann 1996, Rousseau *et al.* 1996). Furthermore, the optical spectra show highly structured Balmer and He II emission lines which reflect the complex accretion geometry and which can be used to model the accretion flow (e.g. Kim \& Beuermann 1995, 1996). All present knowledge on various aspects of MCVs derives from a few well-studied objects. This has been altered by the ROSAT mission which hitherto led to the discovery of some 50 new X-ray bright MCVs, more than doubling the census compared to pre-ROSAT times. A similar number of MCV candidates contained in the ROSAT Bright Source and Point Source Catalogues still lack an optical identification. We will discuss our program for the optical follow-up photometry and spectroscopy of new suspected MCVs.