

## RAPID OSCILLATIONS IN DQ HER AND UX UMA

Jacobus A. Petterson  
Department of Physics  
University of Illinois at Urbana-Champaign

Although the novalike variable UX UMa strongly resembles the classical nova DQ Her in color, emission spectrum, and optical lightcurve, the properties of the rapid oscillations in both systems are quite different. The oscillations differ in period, amplitude, and phase stability, but most remarkably they differ in the characteristics of the "eclipse related phase shift." The phase shift in DQ Her is explainable by partial obscuration of the disk during eclipse, together with the idea that the oscillating light does not reach us directly from the white dwarf, but is reflected by the disk. It comes from a rotating UV beam originating near the white dwarf surface, which is reflected better by the backside of the disk than by the front side. We show that the phase shift in UX UMa is explainable by the same model, viewed at a different inclination angle  $i$ , if it is assumed that at this value of  $i$  reflection from the frontside of the disk is better than from the backside. There may be different ways to accomplish this preference. The results suggest that no retrograde rotation of the white dwarf (or retrogradely rotating nonradial pulsation) is needed to explain UX UMa's eclipse related phase shift. These phase shifts provide a new (and quite accurate) way to determine a system's inclination angle. Specific predictions are made for the behaviour of amplitude and phase of the oscillations in other eclipsing systems.