

A Period Study and Light Curve Synthesis for the W UMa-type Binary SS Arietis

Chun-Hwey Kim¹, Wonyong Han², Jae Woo Lee¹,
Robert H. Koch³

¹ Dept. of Astronomy & Space Science, Chungbuk National
University

² Korea Astronomy Observatory

³ Dept. of Physics & Astronomy, University of Pennsylvania

Numerous new CCD measures of the cool, over-contact binary SS Ari are compiled into six well-covered light curves. The confusing history of the binary period variability is laid out so as to consider the separate interpretations which have been presented previously. It is concluded that the period activity can be ascribed to no fewer than three separate causes but these remain poorly defined at this time. There is some support for a magnetic cycle functioning in phase with one of the components of the period variability. Although there seems to be spectroscopic evidence of mass transfer, it is at a level far too small to account for the luminosity of the small, hot star. The three light curves from 1996 have responded satisfactorily to a modern synthesis code and the binary characterization is better controlled than was true from earlier light curve studies. Light curves from 1999 have not been so satisfactorily represented. Low-level spot activity has also be modelled. There is no evidence of a third star contributing significant light to the system.