



## Hubble observations of the Uranian ring plane crossing

**M. Showalter** (1), J. Lissauer (2), R. French (3), D. Hamilton (4), P. Nicholson (5), and I. de Pater (6)

(1) SETI Institute, (2) NASA Ames, (3) Wellesley, (4) U. Maryland, (5) Cornell, (6) U. C. Berkeley

Between early May and mid-August 2007, Earth was on the north side of the Uranian ring plane while the Sun was still shining on the rings' southern face. This has provided an exceedingly rare opportunity to view the ring system via transmitted light. The epsilon ring, which typically out-shines every other component of the inner ring-moon system, has been rendered essentially invisible. We conducted regular imaging of the Uranian system throughout this period with the Wide Field/Planetary Camera on HST to address numerous scientific goals. (1) To search the inner Uranian system for the "shepherding" moons long believed to confine the narrow rings; (2) to study the packing density of the main rings via direct observations of their vertical thickness; (3) to search for the inner dust rings that appeared in a few Voyager images; (4) to determine the vertical thickness of the faint outer rings mu and nu; (5) to obtain the most sensitive determinations of the outer rings' colors and try to understand why ring nu is red but ring mu is blue; (6) to search for additional outer dust rings under optimal viewing geometry; and (7) to continue monitoring the seemingly chaotic orbital variations of the inner Uranian moons. HST observations span mid-May to mid-September. Initial results from this observing program will be presented. We have obtained clear detections of the outer rings, which will provide the first ring color determinations in visual light. With the epsilon ring invisible, the brightness of the main ring system is dominated by inner, dusty sheets of material. We have detected moons as small as Bianca; further processing will be required to identify smaller bodies.