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Proof**CONTROL ID:** 1544436**SUBMISSION ROLE:** Research Contributed, Dissertation **OR** Student Virtual Forum**DATE/TIME CREATED:** October 1, 2012, 3:55 PM**TITLE:** Comparing Clumps in Saturn's F Ring from Voyager to Cassini

Abstract (2,250 Maximum Characters): Saturn's F ring is unusual in that it is subject to dynamic structural changes over short periods – anywhere from days to months. Images from the Voyager and Cassini spacecraft have revealed phenomena such as kinks, fans, channels, streamers, and clumps, all of which change over these short time intervals. While the causes of some of these features have been explained and well documented, we are still attempting to learn more about others. This work focuses on the nature and behavior of clumps, diffuse bright regions that extend 3-40 degrees in longitude. Previous work by Showalter (2004, Icarus, 171, 356) showed that it was possible to analyze and track clumps with respect to the F ring's mean motion using Voyager data. Now using 6 years' worth of Cassini images, we have developed a new method of detecting clumps using wavelet theory. We compare the physical attributes of current clumps to those analyzed in the Showalter study and find significant differences. In general, modern clumps are wider, less bright, and occur less frequently. It is becoming increasingly evident that the F ring we see today is not the same ring it was 30 years ago.

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