

**Rotational Modulation of Saturn Radio Emissions  
During the Cassini Mission  
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Despite the close axisymmetry of Saturn's internal field, modulation periods around 10.7 hours are observed in magnetic field perturbations, charged particles, energetic neutrals and three Saturn radio emissions, namely, Saturn kilometric radiation (SKR), narrowband emission, and auroral hiss. The modulation periods of the radio emissions have been found to consist of two components, one associated with each hemisphere, which showed seasonal variation and crossed each other after equinoxes. The hemispheric asymmetry may arise from different solar illuminations in two polar regions, which leads to different strength of the rotating field-aligned currents in two hemispheres. SKR and auroral hiss are known to be generated by the upward and downward field aligned currents, respectively. With the completion of the Cassini mission in September 2017, we now have over 14 years of observations of Saturn radio emissions, roughly from southern solstice to northern solstice. In this presentation, we will show that northern hemisphere emissions have become dominant and their modulation rates have slowed to the level of their southern counterparts before equinox. We will also examine the phase relation between these radio emissions and the local time dependence of their intensities over the entire mission. Both SKR and narrowband emissions are modulated like a clock, whereas auroral hiss is modulated like a rotating beam. As a result, the phase difference between SKR and auroral hiss changes with local time of observation. SKR and auroral hiss intensities exhibit strong local time dependence, whereas narrowband emission intensities appear to be local time independent, likely due to the mode conversion generation mechanism.