



## **Narrowband electromagnetic emissions at Saturn**

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Voyager observations revealed the existence of a complex set of narrowband electromagnetic emissions at Saturn in the frequency range of 3 to 30 kHz. These were thought to be generated by mode conversion from electrostatic upper hybrid waves into ordinary mode electromagnetic waves. Cassini has now made repeated observations of low-frequency narrowband emissions, primarily from the dawnside vantage point of the early orbital tour. The emissions observed by Cassini are similar to those discovered by Voyager. A dominant portion of the events detected so far are near 5 kHz but there is a secondary population near 20 kHz. Sometimes the emissions occur as solitary narrowband tones, but often there are two or three closely-spaced bands. Typically, the bands near 5 kHz drift to higher frequencies at a rate of a few hundred Hz per hour. A new observation is that these emissions are often modulated in intensity at periods of about 7 minutes. We will use Cassini's direction-finding capability to identify the source region for these emissions.