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ABSTRACT TITLE:

Cloud Profiling Radar (CPR) for the CloudSat Mission

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ABSTRACT TEXT:

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The CloudSat Mission is a new satellite mission currently being developed by NASA and the Canadian Space Agency (CSA) to acquire a global data set of vertical cloud structure and its variability. Such data set will provide crucial input to the studies of radiation budget and water distribution in the atmosphere, and to the numerical weather prediction models.

One key science instrument aboard the CloudSat satellite is the Cloud Profiling Radar (CPR). CPR is a 94-GHz nadir-looking radar that measures the power backscattered by clouds as a function of distance from the radar. This sensor is expected to provide cloud measurements at a 500-m vertical resolution and a 1.5-km horizontal resolution. CPR will operate in two modes: a short-pulse mode which yields measurements at a minimum detectable sensitivity of -28 dBZ; and a chirp-pulse mode which yields measurements at a minimum detectable sensitivity of -32 dBZ.

In this paper, we will present the system design and the expected performance of this instrument, as well as the state-of-the art millimeter-wave technologies employed by this instrument.

TOPIC PREFERENCE: Instrumentation and Future Technologies (IFT)