

## A Simulated Dataset of the Huygens Mission

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Huygens is the ESA-provided element of the joint NASA/ESA/ASI Cassini/Huygens mission to Saturn and its largest moon Titan. The Huygens probe will dive into the dense atmosphere of Titan on January 14th 2005 and will land on the surface after a nominal descent of about 150 minutes.

An important effort is devoted to the development of an algorithm that aims to reconstruct the descent trajectory and attitude of Huygens from the scientific instruments and probe sensors measurements (see the invited presentation of B. Kazeminejad). In order to test this algorithm, a simulated synthetic mission dataset is being prepared.

In this poster we report the philosophy of our approach, its assumptions and limitations. We describe the different tools that are used:

- The DTAT tool, used to simulate the main trajectory parameters: acceleration, velocity, and position.
- The PASDA tool: a high fidelity model of the probe that provides the attitude variations in response to various disturbances.
- A 6 degrees-of-freedom tool, used for the prediction of the angular body rates during the probe entry.

We report how these models are used to obtain the most realistic Huygens simulated synthetic dataset. The dataset is described, sensor-by-sensor. A special attention is given to the way we simulate the various accelerations that will be measured by the probe.