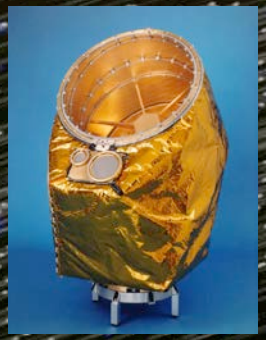
Cassini Snags Rare Specks of Speeding Interstellar Dust

Three dozen interstellar particles zooming through our solar system smashed into Cassini's bucket-shaped cosmic dust analyzer, giving scientists new information about the raw material from which stars are made.

- The dust grains were each smaller than a smoke particle. Their origin from beyond the solar system was betrayed by their high speed of more than 45,000 miles per hour (72,000 kilometers per hour) and distinctive angle of flight.
- Cassini analyzed the composition of the interstellar dust particles for the first time, finding them to be a homogeneous mix of rock-building elements such as magnesium, silicon, calcium and iron, in proportions similar to those that make up our local galactic neighborhood.
- The dust particles were deficient in reactive elements such as carbon and sulfur, likely due to changes induced by shock waves in the interstellar medium.
- The homogenous composition of the interstellar dust grains detected by Cassini indicates that most dust grains that go into creating new solar systems are not the fresh, pristine dust produced by stellar explosions. The finding provides new understanding of the "DNA" of stars and planets.

Cassini's Cosmic Dust Analyzer



"Flux and Composition of Interstellar Dust at Saturn from Cassin's Cosmic Dust Analyzer," N. Altobelli *et al.*, Science, 352, 312-318, 2016.
https://saturn.jpl.nasa.gov/news/2895/