

Meet the scientists exploring the hidden motion inside Pluto's nitrogen glaciers

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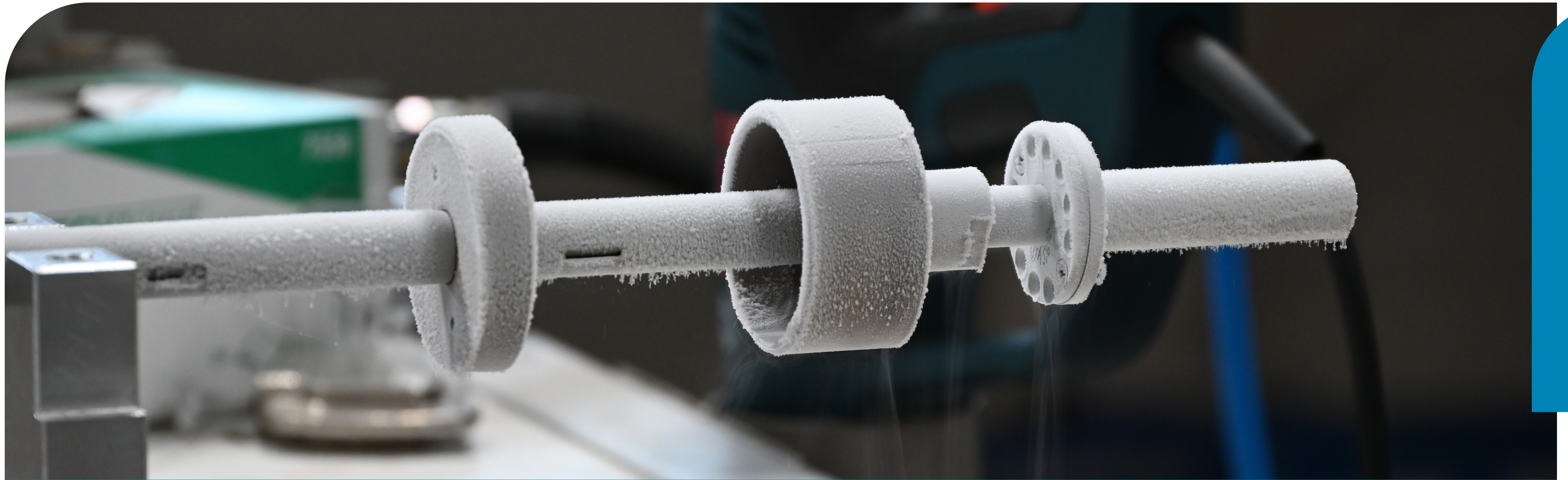
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Within Pluto's "heart" region lies Sputnik Planitia, a vast plain of frozen nitrogen marked by polygonal patterns, a visible clue that this solid nitrogen is slowly moving beneath the surface.





Despite nitrogen's central role in shaping Pluto's surface, scientists still know little about how it moves under cryogenic temperatures. Most studies have focused on its structure and phase behaviour. The dynamics inside solid nitrogen remain the missing piece.

The molecular motions of solid nitrogen are expected to happen extremely fast, on the picosecond and nanosecond timescales. Neutron spin echo is designed to capture this timescale, helping scientists study how nitrogen molecules reorient under Plutonian conditions.



“NASA’s New Horizons mission showed us that Pluto’s surface is active. With WASP, we can now investigate the material behaviour behind that activity: the molecular reorientations that may govern the rheology and flow of solid nitrogen.”

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This experiment is a striking example of how the understanding the smallest effects, such as the motion of nitrogen molecules, can help explain some of the most remote landscapes in the Solar System.

