

Reinventing the wheel

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8-inch iRings wheels demonstrating compliance using a rover testbed. / Photo: Brad Jones/Neptec Design Group

Creating a wheel for some of the worst potholes known to humankind is just one of the extraterrestrial challenges a team of McGill students and professors face in developing and testing a wheel prototype for the new Lunar Exploration Light Rover (LELR).

The new Canadian rover will be used during [lunar exploration](#) to carry payloads, cargo and crew, as well as enable drilling and excavation, manipulator and tool integration, and vision and state-of-the-art communications systems.

[Mechanical Engineering](#) Professor Peter Radziszewski is leading the team as part of an \$11.5-million contract awarded by the Canadian Space Agency to Neptec Design Group.

"My students and I are thrilled to be on the Neptec Rover Team (NRT) as it will allow us to advance our earlier prototypes of lunar-friendly wheels and make a significant and innovative contribution to Canada's space program," said Radziszewski.

Radziszewski and his team began working on developing wheel prototypes in 2009, one of which - dubbed iRing - is made of an external chainmail "fabric" filled with granular particulate matter; sort of like a metal bean-bag chair shaped like a wheel.

This distinctive design provides both flexibility and sturdiness when travelling over extremely bumpy lunar terrain.

Radziszewski is quick to recognize the efforts of fellow colleagues and many McGill students - nearly 60 so far from both the undergraduate and graduate programs - who have been and will be involved on the [wheel](#) portion of this project and other aspects of the rover's traction system development. "This effort is really a nexus of teaching and research. We have built a bank of expertise in creating intellectual property that supports a Canadian space-mobility effort," he said.

The final prototype of the lunar [rover](#) is expected to roll out in the spring of 2012.

Provided by McGill University

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