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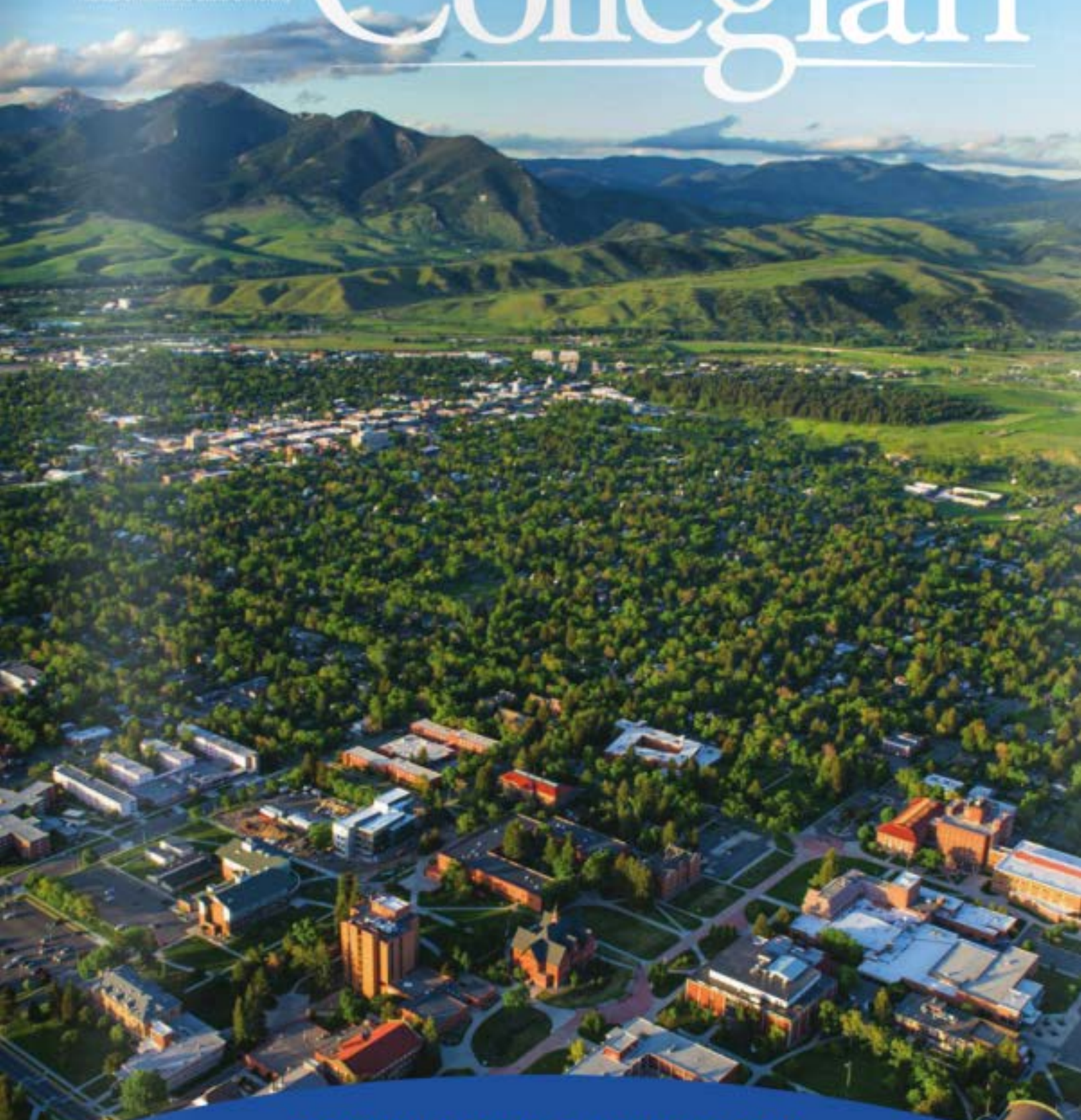
MSU computer heading to International Space Station

Montana State University professor **Brock LaMeres** '98, has been awarded $100,000 and the chance to test his computer technology on the International Space Station.

NASA announced in June that MSU was one of five institutions to submit a winning proposal for this opportunity. That means a computer system designed at MSU will ride on the International Space Station. The system is designed to operate in the presence of high energy radiation particles that pass through space craft and radiation shields. These particles might not permanently damage electrical circuits, but they can cause computers to crash.

"This is extremely exciting," LaMeres said. "This represents one of the last steps to demonstrate this technology before it can be adopted in a real NASA mission."

LaMeres designed the radiation-tolerant computer system with doctoral students Justin Hogan and Raymond Weber who graduated in May, and master's degree student Samuel Harkness. All four are in MSU's Department of Electrical and Computer Engineering.

He predicted that MSU's technology could head for the International Space Station in one or two years. During the upcoming year, his team will work with NASA engineers to make sure the computer system meets safety standards and can communicate with the space station. He will then turn it over to NASA, which will schedule the computer system for flight.

MSU's computer system will ride inside the International Space Station and be exposed to the same high energy radiation particles that other, more expensive computers face inside the station, LaMeres said. The MSU computer is built with off-the-shelf parts in order to reduce cost. MSU's computer promises to deliver the same level of reliability as
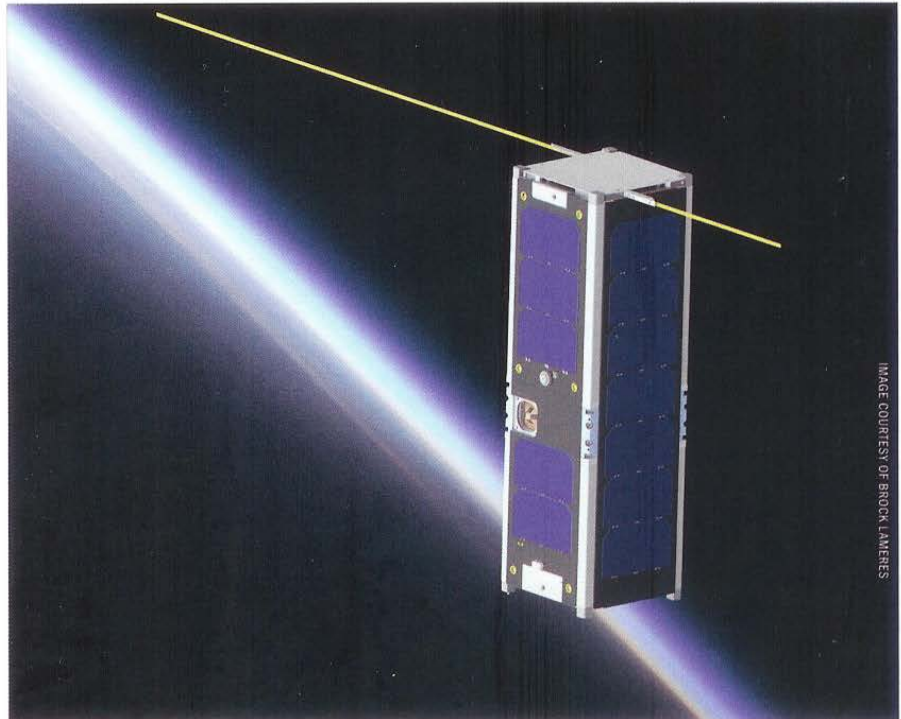
existing space computers at a fraction of the cost. He expects it will be tested on the space station between six months and two years, according to LaMeres.

The opportunity to fly on the International Space Station is the latest in a series of follow-on grants that LaMeres has received from NASA since he was awarded the original funding that allowed him and his students to start designing the radiation-tolerant computer system. In fact, LaMeres heard the news while in Colorado delivering the same computer technology to a company that will launch it this fall on a sounding rocket over New Mexico as part of another NASA-sponsored project. The sounding rocket flight will put the computer system in space, but only for a few minutes before it returns to Earth. The space station flight will allow the computer to be tested in orbit for much longer.

The original grant to build the computer system came in 2010. It was a three-year, $750,000 grant from NASA's Experimental Program to Stimulate Competitive Research (EPSCoR), the same agency that awarded LaMeres the

opportunity to fly his technology on the International Space Station. NASA said it selected proposals from MSU, the University of Kentucky, Lexington; the Maine Space Grant Consortium, Augusta; the University of Nebraska, Omaha; and the University of Delaware, Newark because they were important to NASA's mission. The proposals should also help university faculty develop science and technology curricula and support higher education students pursuing studies in science, technology, engineering and math (STEM).

EPSCoR is managed by NASA's Office of Education. EPSCoR helps develop partnerships among NASA research missions and programs, academic institutions and industry. It also helps the awardees establish long-term academic research enterprises that will be self-sustaining, competitive and will contribute to their local and state economic viability and development.

—*Evelyn Boswell*

Besides being tested on the International Space Station, MSU's radiation-tolerant computer may eventually orbit the Earth as a stand-alone satellite.

IMAGE COURTESY OF BROCK LAMERES