

**SD NASA EPSCoR 2012 Minority-Serving Institution Faculty Engagement Award
(Approved for funding May 2, 2012 – May 1, 2014)**

| South Dakota investigator(s) and affiliation | Project title | NASA funds | NASA and other collaborations |
|---|--|-------------------|---|
| PI: Edward Duke, SDSM&T Co-I/Science PI: Dr. Kazem Sohrawy, SDSM&T Co-I: Wei Wang, SDSU; Jim Dudek, OLC | Optimal Power and Relay Selection in Wireless Relay Networks | \$249,497 | Jenny Tieu, Manager, Minority Student Programs, NASA JPL; Jennifer Scott Williams, Acting Manager, Minority University Research and Education Program Office of Education, NASA JSC |

Project Summary

Optimal Power and Relay Selection in Wireless Relay Networks

South Dakota NASA EPSCoR was selected for funding under the 2011 Minority-Serving Institution Faculty Engagement Competition. The funded project is titled “Optimal Power and Relay Selection in Wireless Relay Networks.” Funds of ~\$250,000 will significantly improve research and education collaboration between electrical and computer engineers at Oglala Lakota College, South Dakota School of Mines and Technology, and South Dakota State University. The research will be further coordinated with NASA’s Johnson Space Center, the Jet Propulsion Laboratory, and the Minority University Research and Education Program.

The technical focus of the research will be optimization of power and relay selection in wireless relay networks (WRNs). The ever increasing demand for high data rate services has resulted in a significant amount of energy consumption by the communication system components. In deep space exploration, it is even more critical that power consumption by the communication system be minimized. Given the obvious need to reduce energy consumption, the fundamental challenge is how to maintain adequate coverage, quality of service, and reliability. The research will investigate and optimize parameters of WRNs to address these challenges for space communications and power conservation.

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