

Right: Forecasting hazards posed by the “weather” in space can be as important—and as difficult—as forecasting thunderstorms, tornadoes, and hurricanes on the ground. The highly energetic charged particles emitted by the Sun can endanger astronauts, damage the electronics on satellites and planetary probes, increase the radiation exposure of crews and passengers in high-altitude aircraft, and even affect electrical systems on the Earth’s surface.

Now, however, Ilia Roussev at the University of Hawaii has developed a computer model that could improve space weather forecasts significantly. Based on a well-established, but highly complex physical theory known as magnetohydrodynamics, Roussev’s model, right, accurately simulates the flares and other solar eruptions that emit the high-energy particles.

For more information:

www.ifa.hawaii.edu/users/irussev

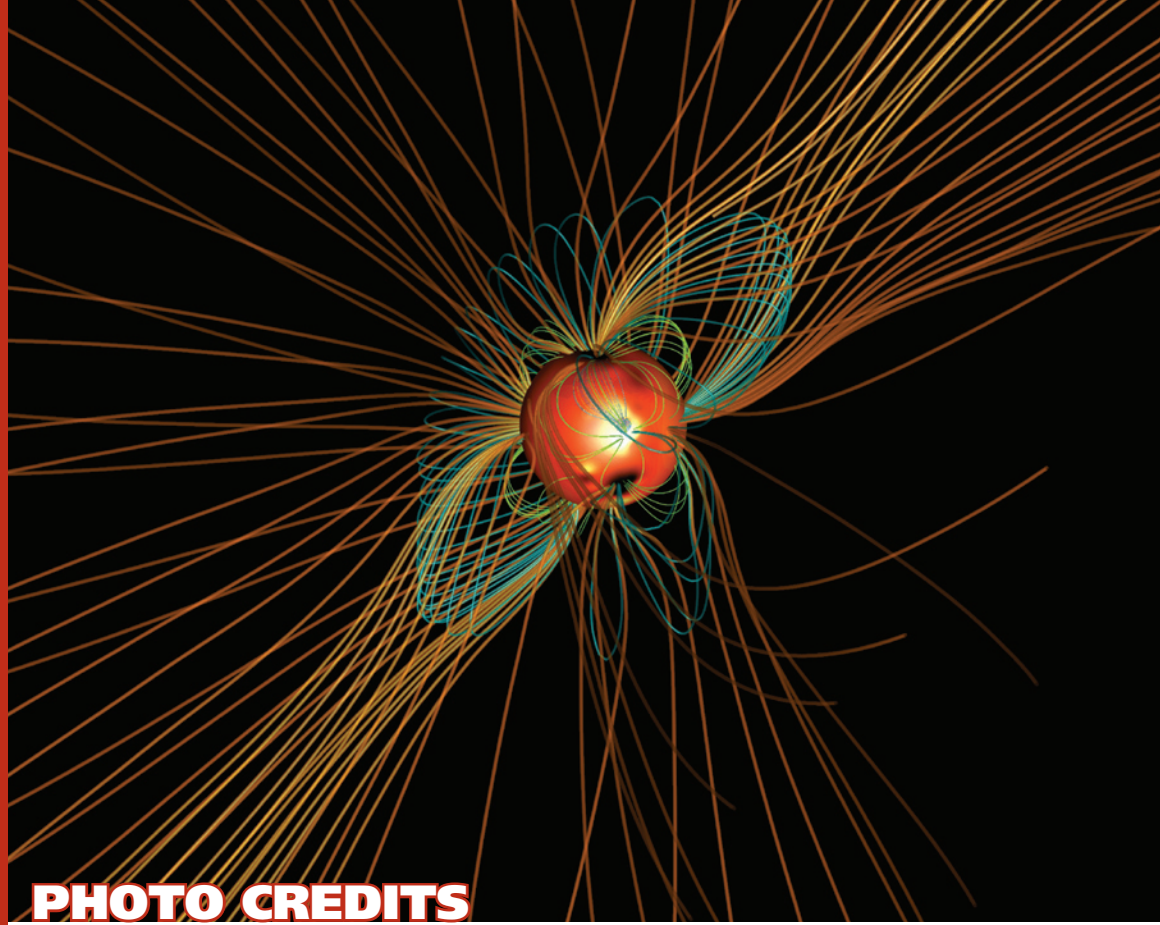


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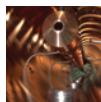
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Security screening at the nation’s airports is expanding beyond searches for knives or liquid explosives to determining the intent of a would-be criminal through next-generation monitoring systems and analyzing culturally independent behavioral cues. Currently in the testing phase, the technologies should dramatically improve the safety, speed, and efficiency of a trip through the airport.

In September 2006, experts in sensor technology, behavioral screening, and biometrics discussed the latest developments in airport security in a telephone interview hosted by the National Science Foundation (NSF). The show is available online in its entirety. Moderated by NSF’s Richard McCourt, the program featured NSF grantees Richard P. Donovan from Montana Tech of the University of Montana, Butte; Mark G. Frank from the University at Buffalo, State University of New York; and Arun A. Ross from West Virginia University.

For more information:

www.nsf.gov/news/news_summ.jsp?cntn_id=108133&org=NSF&from=news



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Los Alamos National Laboratory



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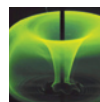
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Credit: Dvir Kafri



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Credit: Professor Jose Restrepo, Department of Structural
Engineering, University of California, San Diego



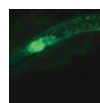
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Credit: M.M. Alvarez, T. Shinbrot, and F. J. Muzzio,
Rutgers University Engineering Research Center
for Structured Organic Composites



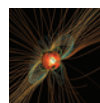
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Credit: Sally McGill



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Credit: Ilia Roussev, University of Hawaii