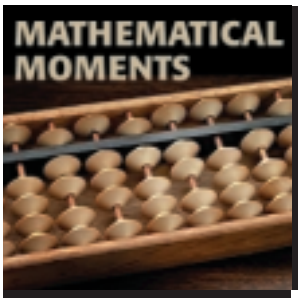

Charging Through Space

Electromagnetic disturbances on the sun usually don't affect us 93 million miles away, but a major solar storm can, with severe consequences for satellites, electricity, and communications. For example, in 1989 solar explosions resulted in the collapse of a major power grid, leaving over six million people in Canada without power. Space weather forecasters now have better mathematical models from which they make statistical predictions about solar activity and its effects. The predictions have improved with technology, but without new mathematics and a refinement of the models, even the best computers would be lost in space.

Space weather models are based on Maxwell's electricity and magnetism equations and fluid flow equations, which due to their complexity, must be solved numerically. Newly launched satellites—including four which maintain a tetrahedral formation and provide a three-dimensional image of space weather—supply needed information to improve our understanding of the space environment and enable warnings about potential disruptions to modern amenities.

For More Information: *Storms from the Sun,* Michael J. Carlowicz and Ramon E. Lopez

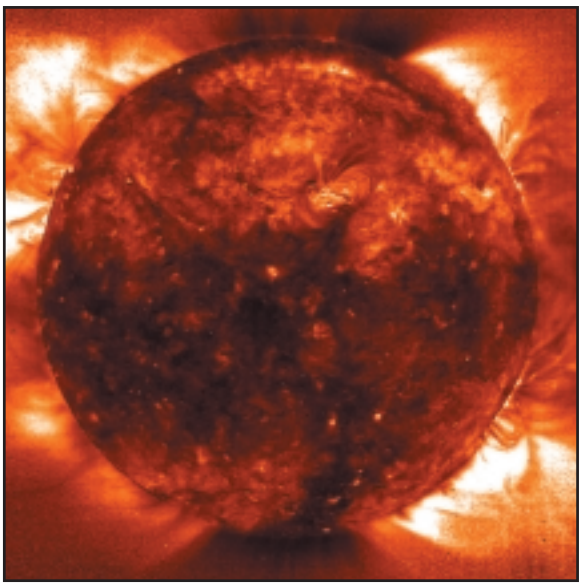

Image courtesy of SOHO (ESA & NASA)

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