PLENARY LECTURE
SATURDAY, 12 APRIL: 8:30AM-10:00 AM (ROOM: FIESTA)

EXTREME BALL LIGHTNING RESEARCH BY INTERNATIONAL VOLUNTARY COLLABORATIVE

J. Pace VanDevender (Sandia National Laboratories and VanDevender Enterprises)
For the last six years, an international team of volunteers has been collaborating to study extreme ball lightning--a natural phenomenon characterized by a glowing ball of light that lasts for 1 to > 1000 s. Although experiments have produced lowing balls of light that fade in <1 s after external power is removed, self-sustaining, energetic ball lightning is not understood. The energetic ball lightning event of August 6, 1868, in County Donegal, Ireland, and reported to the Royal Society by M. Fitzgerald has stimulated a new inquiry. It lasted for 20 minutes and excavated a total of ~100,000 kg of water saturated peat. We found and characterized the site and show that the geomorphology and carbon dating support the account by M. Fitzgerald. The excavation is not consistent with chemical, nuclear, or electrostatic forces but is consistent with magnetic induction by a ~1-MHz electromagnetic field from a > 20,000 kg compact floating object. The weight and emissions suggest a mini black hole that could coexist with normal matter as the gravitational equivalent of an atom (GEA). Such an object should be detectable by its electromagnetic emissions. We have found about fifty 1s to >1000-s bursts of electromagnetic energy between 3 MHz and 350 MHz recorded by the FORTE satellite in October of 1997. Ground-based time-synchronized observations should help identify the origin of the FORTE-like emissions and may help find and understand modern energetic ball lightning events to move us beyond glowing balls of light.