

LABORATORI NAZIONALI DEL GRAN SASSO

SEMINAR ANNOUNCEMENT

Neil Ashby
NIST Boulder, USA

**Relativity, reference
systems, and timing in
the GPS**

Satellite-based navigation systems such as the Global Positioning System (GPS) rely on orbiting atomic clocks, and the exchange of signals between the satellites and the ground. Relativistic principles must be considered and relativistic effects must be accounted for; these include constancy of the speed of light, the equivalence principle, gravitational frequency shifts, time dilation, and the Sagnac effect. Earth rotation requires transformations between earth-centered, locally inertial frames and earth-fixed rotating reference frames. This talk will describe how these issues are incorporated in the GPS and the differences between GPS, GLONASS, and GALILEO. Effects on timing due to ionospheric and tropospheric delays, phase windup, and multipath will also be discussed.

APRIL 18, 2012 – 3:00 PM
LNGS - “E. MAJORANA” ROOM