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Using ring laser gyroscopes to measure seismic induced rotation[1]

KIRK KIMERY, Hendrix College — Seismologists have known for years that the passage of seismic waves could introduce rotational motion in the surface of the Earth. For example, the rotation of tombstones has been observed in Japan following large earthquakes. However, until recently it has been difficult to measure these effects. The current generation of large ring laser gyroscopes has demonstrated the ability to measure rotation around a vertical axis with sensitivities in the nanoradian regime. Results from a horizontally mounted triangular ring laser 17.5 m on a side will be presented. In addition, the development of a ring laser designed to measure rotation about a north-south axis will be discussed. Finally, some preliminary results suggesting that ring lasers are sensitive to hurricane introduced vorticity will be presented.

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