Into the 21st Century

- **4. June 2000 Christchurch, New Zealand and Wettzell, Germany**
- The period 1988-1991 saw the successful construction at the University of Canterbury a square meter ring laser that could operate in a single mode as a gyroscope that could be unlocked by the earth's rotation and measure frequency splittings down to the microhertz level.
- In 1997 collaboration between NZ and Germany led to the construction of a far more precise and stable ring laser also of a square metre which routinely measures parts per million variations in the earth's rotation.

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- June 2000 saw the development of two very large ring lasers and represented a transition from the original NZ table-top ring laser to ring lasers of considerable size. In Wettzell, Bavaria a 4.2m diameter slab of Zerodur, engineered by Zeiss was installed in a purpose-built laboratory 5 metres underground.
- The Wettzell Grossring is expected to sense fluctuations in the earth's rotation at the level of 10^{-8} to 10^{-9} of the base value.
- One of the unexpected developments coming out of the ring laser project has been the ability of ring lasers to measure the rotation accompanying the waves from earthquakes, even when their epicentre is on the other side of the world (e.g. The Turkish earthquake).

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- **5. 4 September 2000 The Ultra-G Ring Laser becomes active** The incredible feat of successfully activating a ring laser with an area of 370 square meters was achieved in Christchurch, New Zealand. Though less stable than the GrossRing it is expected to be more sensitive and an excellent detector of seismic rotations.
- The ring laser project demonstrates the construction of a new measuring tool in physics that is producing undreamed of levels of precision. Their application has barely begun.