

The Normal Modes of a Rotating, Homogeneous, Earth

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*If you're going to write dull, theoretical papers,
you can at least make sure they're correct.*

-- F.A. Dahlen to an early student (1973)

During the time that two of us were employed in the petroleum industry, we observed that our colleagues would occasionally go to considerable lengths to construct laboratory-scale physical models of subterranean environments of interest, such as a fluid-filled borehole in an elastic formation. A frequent goal of these efforts was to provide an independent check on the results of mathematical (and in some quarters suspect), computational models. We noted that, despite this intention, when the physical and mathematical models were divergent the deficiencies were assumed to lie in the physical model.

In the hope of contributing to the spirit of this meeting, and because we believe that you're never too old to ignore experience, we three have undertaken to perform a laboratory measurement of a phenomenon that inspired one of Tony's first major contributions to geophysics: the rotational splitting of the normal modes of a rotating, elastic body. The thorough development of the relevant theory was the topic for Tony's Ph.D. Thesis, under Freeman Gilbert and George Backus.

We've undertaken this measurement specifically for this meeting and there are still a *few more kinks* to be worked out before we have results. We'll keep you posted.