

Abstract for an Invited Paper
for the APR07 Meeting of
The American Physical Society

Gravity Wave Detection - Some Past Efforts and Ideas for the Future.

RONALD W. P. DREVER, California Institute of Technology

Most of the early attempts to detect gravitational waves were stimulated by the experiments of Joseph Weber, and many of them involved techniques using suspended bars with adequate sensitivity to check Weber's claimed findings, but usually hardly capable of detecting likely gravity-wave signals of the strength expected from astrophysical phenomena. Major advances in sensitivity are desirable, and a wide variety of ideas to achieve this have been explored. These have included use of optical interferometer sensing with multiple mirrors, Herriott delay lines, White cell optics with mechanical levers, and long high-finesse optical cavities. Ideas for improved test mass suspensions have included special magnetic levitation techniques and the coupling of suspension systems together. Some of these and other ideas, and experiences with them, will be reviewed, as well as future possibilities for ground-based gravitational wave experiments in general. Advantages and difficulties of similar observations in space will also be briefly discussed.