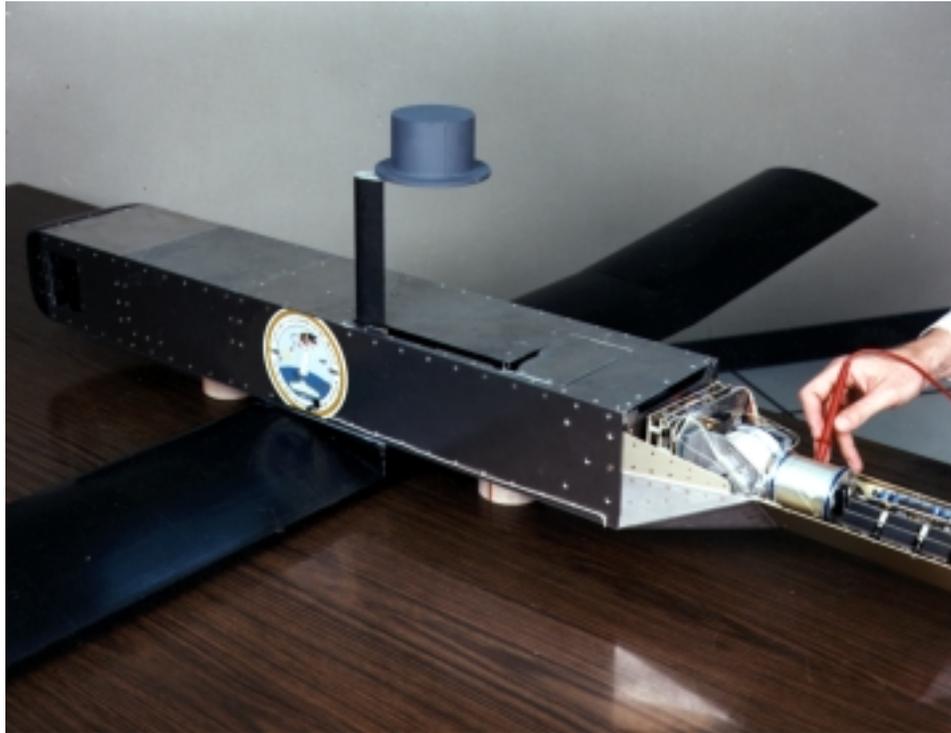


LOW-COST OPEN-LOOP FIBER-OPTIC GYROSCOPE



A signal processing technique for the open-loop, fiber-optic gyroscope has been developed at NRL that is based on an electronic closed-loop "phase-shift nulling" concept. The system provides a linear output from an open-loop gyro configuration with good linearity and relatively low noise and drift. Features of the system include:

- Electronic "close-loop" operation, where the rotation-induced Sagnac phase is nulled electronically instead of optically as in true closed-loop approaches
- Wide dynamic range of $> \pm 2\pi$ radians Sagnac phase shift
- Good linearity (~ 1000 ppm)
- Very low-cost analog components
- Digital implementations

Combined with the use of a low-cost optical head based on a depolarized fiber-gyro configuration, the system provides a basis for a low-cost optical gyro system that may be suitable for a range of low to medium accuracy applications. Such applications areas include:

- Short-term autopilot system
- Medium accuracy rate sensing
- Robotics
- Tethered vehicles

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