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Emily K Bice* (emily.k.bice@boeing.com). *Enhancing Inertial Navigation*.

Inertial navigation is still a widely-used technique to provide position, orientation, and velocity of a moving object. An inertial navigation system is a (nearly) self-contained system that primarily relies on dead-reckoning from inertial instruments, rather than external signals such as GPS, to navigate. Two types of inertial navigation are the gimballed inertial navigator and strap-down inertial navigator. Modern inertial instruments such as the fiber-optic gyro have inherent stochastic properties which necessitate sophisticated mechanizations and techniques in order to design a high-accuracy system. In this presentation, an overview of inertial navigation is provided, with an emphasis on marine systems. Then, a discussion of mathematical and statistical applications to improve the navigation solution is given. (Received September 01, 2015)