
Testing environmental disturbances in precision accelerometry onboard low Earth orbiters

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Abstract

Data analysis from previous missions has made clear that space accelerometer measurements are susceptible to complex patterns of disturbances. Hypotheses on sources and mechanisms include electromagnetic forces and fluxes on board the satellite platforms, coupling due to charged particles in the ionosphere, radiative influences, as well as thermal and mechanical effects. Better understanding and modeling of disturbances would improve their value for gravity and aeronomy studies, and advance the understanding of laboratory conditions on space platforms. We compare disturbances known from previous missions and discuss general ideas for dedicated testing of mechanisms on ground and in space, having in mind both physics missions as Microscope and geodetic missions as GRACE Follow-On.

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