

**Precision laser development for interferometric space missions NGO, SGO,  
and GRACE Follow-On**  
Kenji Numata, Jordan Camp

Abstract

Optical fiber and semiconductor laser technologies have evolved dramatically over the last decade due to the increased demands from optical communications. We are developing a laser (master oscillator) and optical amplifier based on those technologies for interferometric space missions, including the gravitational-wave missions NGO/SGO (formerly LISA) and the climate monitoring mission GRACE Follow-On, by fully utilizing the matured wave-guided optics technologies. In space, where simpler and more reliable system is preferred, the wave-guided components are advantageous over bulk, crystal-based, free-space laser, such as NPRO (Non-planar Ring Oscillator) and bulk-crystal amplifier.