Abstract

Even in absence of earthquakes, each site on earth experiences continuous elastic vibrations which are mostly traced to the non-linear interactions of ocean waves. However, the fine structure of the spectrum at mHz frequencies shows many persistent and highly significant narrow bandwidth peaks in surprising coincidence with solar acoustic eigenmodes. The feasibility of a common cosmic origin is evaluated through an estimate of the gravitational wave cross-section of the earth, combined with its elastic response and with the stochastic amplification produced by the interference of the cosmic signal with tremor of oceanic origin. The measured spectral peaks appear compatible with a gravitational monochromatic illumination at strains h>10^(–20), larger than those expected for any known gravitational stellar source. Hence, a gravitational source attribution to the tremor spectral peaks would call for a population of unknown non-luminous sources with well defined mass-distance ratios.