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Oral
(Virtual Talk)
The dynamic, magnetized solar corona hosts a variety of plasma or magnetohydrodynamic (MHD) waves, including fast and slow magnetosonic waves, and Alfven waves, that are believed to play important roles in many fundamental, yet enigmatic processes, such as energy transport, corona heating, and solar-wind acceleration. They also carry critical information that can be used to decipher the physical parameters of the corona, such as the magnetic-field strength, by a technique called coronal seismology. It is analogous to helioseismology and terrestrial seismology, which utilize acoustic waves and earthquake-generated seismic waves to probe the internal structure of the Sun and the Earth, respectively. In particular, large-scale extreme ultraviolet (EUV) waves, thanks to routine space-borne observations in recent decades, are now understood to be integral components of solar eruptions, including coronal mass ejections (CMEs) and/or flares, which are major drivers of adverse space-weather disturbances. We present recent progress in observations and modeling of such waves, focusing on their impact on and the response of the solar corona on global scales. We discuss their application for global coronal seismology, as well as their potential implications for space weather and for similar processes on other stars.
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