

Role of parallel inhomogeneous flow on ionospheric fluctuations

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We suggest a novel proposition that the curvature in the parallel flow can stabilize low-frequency space instabilities. This might have an important impact on the space physics. This is because a fundamental reality throughout the space plasma is the existence of magnetic field-aligned flows. It is usually believed that the spatial transverse shear in the parallel flow destabilizes many low frequency instabilities and this may be the origin of low frequency oscillations in the ionosphere. However, our proposition that the transverse curvature in the parallel flow can overcome this destabilizing influence of shear and can render the low frequency modes stable, can change this prevailing notion in space physics altogether.