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Low Frequency Oscillations in the Upper Atmosphere SUDIP SEN, Kyoto University, Japan & Delhi University, India — No definitive theory exists which explains the origin of various low frequency oscillations observed in the ionosphere. Various authors, over the course of time, have put forward various explanations of this important phenomenon. Most recently it has been proposed that the spatial transverse shear in the parallel flow destabilizes many low frequency oscillations and this may be the origin of low frequency oscillations in the ionosphere [V V Gavrishchaka et al., Phys. Rev. Lett. **80**, 728 (1998) and Phys. Rev. Lett. **85**, 4285 (2000)]. In this article we review the various theories proposed till date to explain the origin of low frequency oscillations. We address the most recent theories in more detail. We show that the recent proposition of the spatial transverse shear might excite many instabilities may not be so obvious. Parallel flow curvature when taken into account might actually act to stabilize various instabilities [S. Sen et al. Phys. Rev. Lett. **88**, 185001 (2002)]. This article therefore concludes while much work has been done on the ionospheric oscillations much more work possibly remains to be done in this important area of space physics.

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