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The double-gradient model of flapping instability with oblique wave vector

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The double-gradient model of magnetotail flapping oscillations/instability is generalized for the case of oblique propagation in the equatorial plane. The transversal direction Y (in GSM reference system) of the wave vector is found to be preferable, showing the highest growth rates of kink and sausage double-gradient unstable modes. Growth rates decrease with the wave vector rotating toward the X direction. It is found that neither waves nor instability with a wave vector pointing toward the Earth/magnetotail can develop.