

SEMINÁRIO DE MECÂNICA

Washboard road instability on wet granular materials

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12/04/17

16:00 Horas

Auditório do MAT

Abstract. When a sand track is subjected to repeated passages of vehicles, under certain conditions, a regular pattern of ripples appear: this is known as washboard road, which is common on dry unpaved roads. We reproduced this instability with a experimental apparatus and also thanks to soft sphere molecular dynamics simulations. Previous experimental work and numerical simulations have shown that ripples appear above a critical speed. Then this phenomenon was studied when a simple inclined blade was used as vehicle, to exhibit the role of grain transportation in the instability. A linear stability analysis was built, which predicts quantitatively the characteristics of the ripples formation. We will present the latest experimental and numerical work on the washboard road, when the sand track is wet and therefore cohesive. We studied the dependence of the main characteristics.