明治大学先端数理科学インスティテュート

MIMS現象数理カフェセミナー

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Sand influx effect on barchan dynamics using crest line model

Sofia Navarro Yabe（Meiji University, MIMS）

Abstract：Barchans are dunes found in desert with little sand and a consistent seasonal wind. They expel sand from tips of the leeward. Since barchans exist in groups, the expelled sand is supplied to the barchans. Therefore, it is important to consider the indirect interaction between barchans due to such sand flow. We investigate it using crest line model[1]. Crest line model is a differential equation-based mathematical approach to dune dynamics using only two variables. In that sense, it is a minimal model which enables us mathematical treatment of the dynamics of dune. As a new aspect of this study, we have extended this model to the barchans with influx. In this talk, we show the simulation results and insights into the mathematical solution of barchan migration due to influx. The results can provide further understandings the dynamics of barchan collisions.

[1]L. Guignier, et al., Sand dunes as migrating strings, Physical Review E (2013)

問い合わせ：Park Hyunjoon
Email: hyunjoonps@gmail.com