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Mechanisms of intruder motion in cyclically sheared granular media[1] HU ZHENG, Hohai University; Duke University, JONATHAN BARS , Duke University; Universit de Montpellier, DONG WANG, ROBERT BEHRINGER, Duke University — We perform an experimental study showing how an intruder, a Teflon disk that experiences a moderate constant force, F, can advance through a granular material that is subject to quasi-static cyclic shear. The large Teflon disk is embedded in a layer of smaller bidisperse photoelastic disks. The granular medium and disk are contained in a horizontal cell, which is deformed from a square to a parallelogram and back again. The area of the cell remains constant throughout, and the protocol corresponds to cyclical simple shear. We find that the net intruder motion per cycle increases as a power law in Nc. The intruder motion relative to the granular background occurs primarily following strain reversals.

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