The Granular Pebble Game[1] MAHESH BANDI, SATHISH AKELLA,
OIST Graduate University — *The Pebble Game* represents a class of graph theoretic
problems where pebbles (representing vertices) are constrained by bonds or physical
contacts (edges). The pebble game also shares close correspondence with rigidity
percolation transition in a variety of materials problems, where the evolution of
rigidity in solids can be mapped to growth of network rigidity in a graph. Indeed,
the class of materials known as topological or network glasses arose precisely from
such an analysis in the context of chalcogenides and covalent glasses. Here we
report a set of ultra-high precision experiments performed on a bidispersed set of
photoelastic disks subjected to uni-axial compression. We analyse the formation
of an amorphous granular solid from a loose granular pack under compression, as
an exercise in the growth of rigidity in the granular contact network. We present
preliminary results of our analysis to understand rigidity percolation in granular
packs and their connection to the granular jamming transition.

Mahesh Bandi
OIST Graduate University