

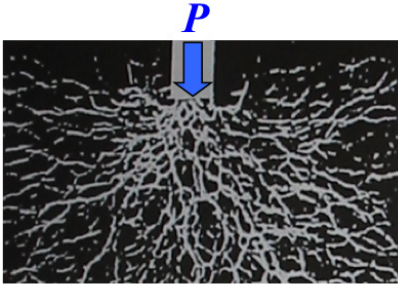
Acoustic time reversal in granular media

Maxime Harazi, Yougu Yang, Mathias Fink, Arnaud Tourin, Xiaoping Jia
Institut Langevin, ESPCI Paris, PSL Research University, CNRS, Université Paris Diderot

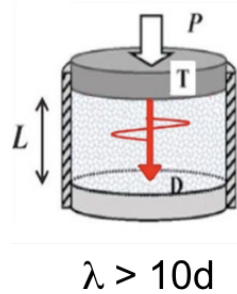


Experiments

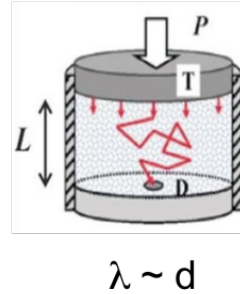
Contact force network



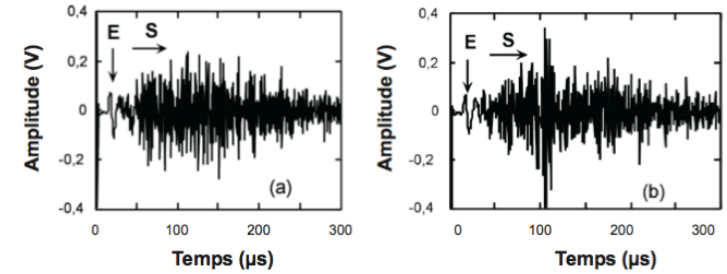
Coherent wave



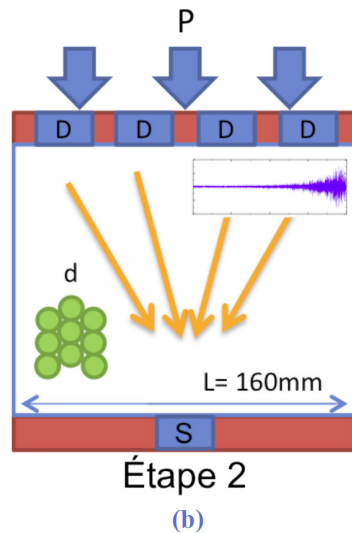
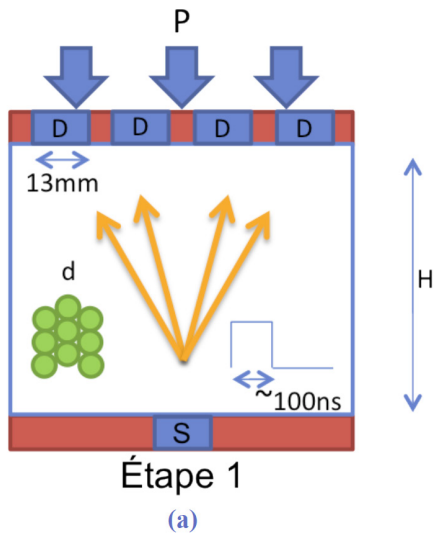
Scattered wave



Typical acoustic signal

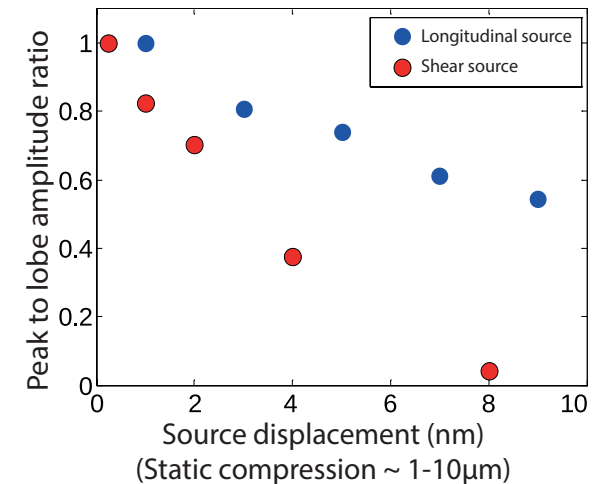
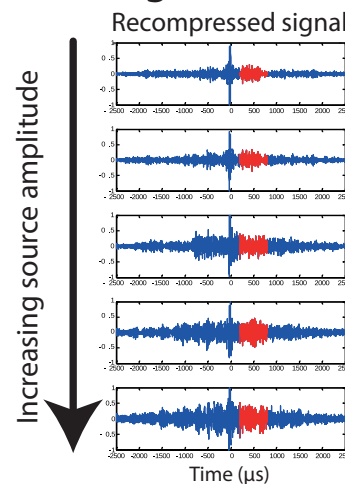


Time reversal



Failure of TR focusing at high amplitude

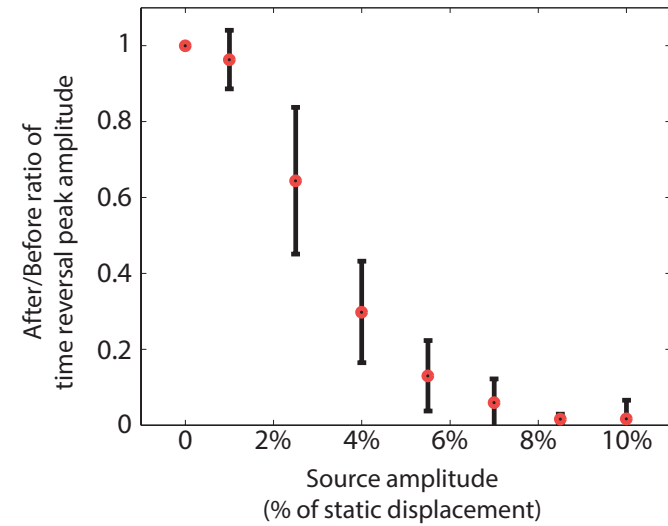
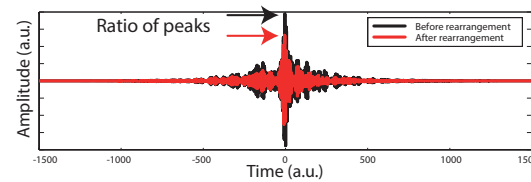
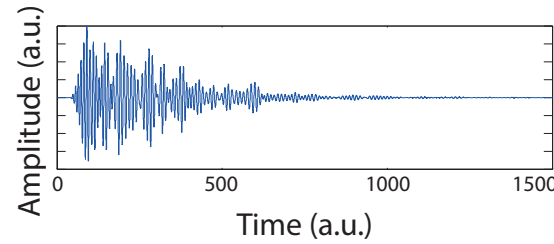
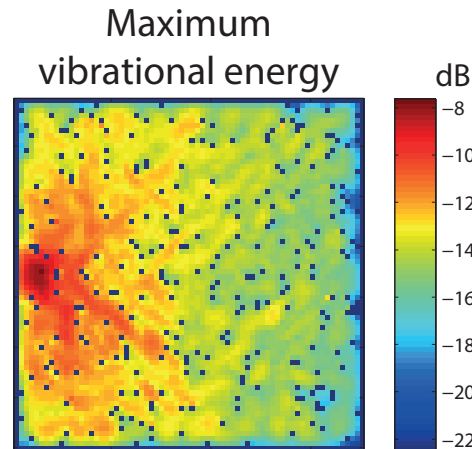
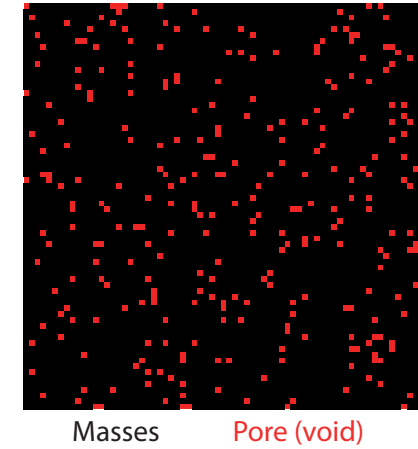
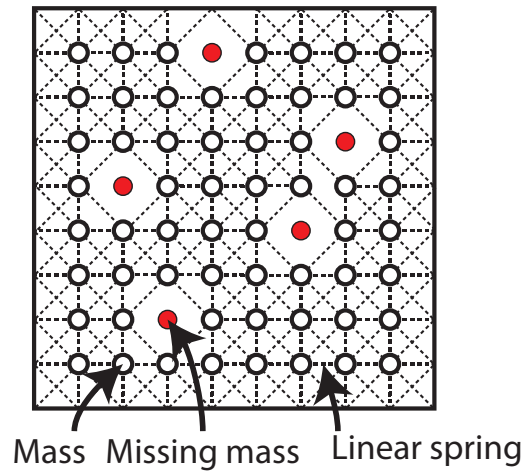
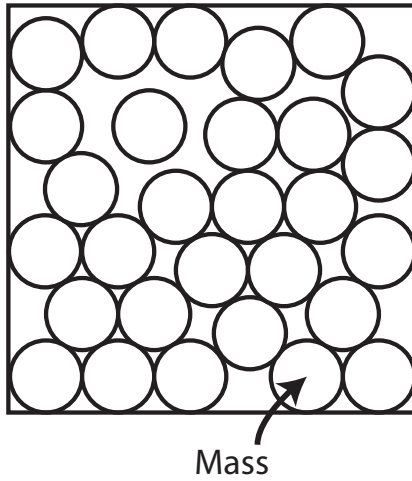
TR focusing at the source



Acoustic time reversal in granular media

Maxime Harazi, Yougu Yang, Mathias Fink, Arnaud Tourin, Xiaoping Jia

Simulations



Acoustic time reversal in granular media

Maxime Harazi, Yougu Yang, Mathias Fink, Arnaud Tourin, Xiaoping Jia