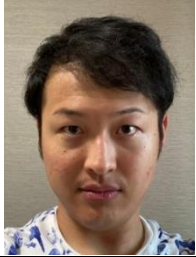| Name:	**Daisuke Ishima**	
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Theoretical determination of stress-strain curve of two-dimensional amorphous solids of dispersed frictional grains with finite shear strain

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The rigidity of frictionless grains is determined by the eigenvalue analysis of Hessian which is obtained from the configuration of grains [1]. However, frictional force between grains cannot be ignored in physical situations.

In this talk I would like to report the theoretical expression of two-dimensional amorphous solids consisting of frictional dispersed grains which are interacted with a harmonic potential with finite shear strain, in which we ignore the dynamical friction caused by the slip processes of contact points. This research is a natural extension of our recent paper in the linear response regime [2]. With the aid of eigenvalue analysis of Hessian matrix, we theoretically determine the rigidity. The theoretical rigidity agrees with that obtained by molecular dynamics simulations except for the yielding point at which stress drops take place.

[1] C. Maloney and A. Lemaître, Phys. Rev. E **74**, 016118 (2006).

[2] D. Ishima, K. Saitoh, M. Otsuki and H. Hayakawa, arXiv:2207.06632.