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**Elasticity of floppy amorphous systems** GUSTAVO DÜRING, EDAN LERNER, MATTHIEU WYART, New York University — Simple amorphous solids made of repulsive particles display curious properties when they are barely mechanically stable, in particular near the unjamming transition where pressure vanishes. Here we focus on another class of materials, including granular flows, covalent glasses or gels of semi-flexible polymers. In such materials the coordination associated with the dominant interaction is too weak to guarantee mechanical stability. This fact implies the presence of floppy modes, collective motions of particles that have no or very little restoring force, and that strongly affect the properties of these materials. We use analytical methods to derive the response of these systems, their length scale and frequency dependence, and test these numerically. If time permits our results will be compared with numerical observations in simplified suspension flows.

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