Abstract Submitted
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Boson modes and Floppy modes in network glasses[1] D. NOVITA, PING CHEN, P. BOOLCHAND, University of Cincinnati — Network glasses differ from their crystalline counterparts in a significant way- the presence of an excess of low-frequency vibrations. Here we show that in a covalent[2] (As_xS_{1-x}) and in a super-ionic[3] ($AgI_{(x)}AgPO_{3(1-x)}$) glass system, Raman Bose peak scattering strength (I_B) displays commonalities; in the flexible phase of these systems, I_B is found to increase almost linearly as networks become more flexible or their connectivity decreases. Moreover, the rate at which $dI_B/d\boldsymbol{r}$ changes is reminiscent of the variation $df/d\boldsymbol{r}$ of the floppy mode count (f) with $\boldsymbol{r}$ in rigidity theory. These results suggest that at least in the flexible phase, contributions to the boson peak must result in large part from floppy modes.

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[2]P. Chen et al. ArXiv 0810.3637
[3]D. Novita et al. ArXiv 0808.1154

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