Low-k behavior in Structure Factor and Compressibility Factor for Monodisperse and Bidisperse Packings of Frictionless Spheres JAIME BOHORQUEZ-BALLEN, LEONARDO SILBERT, Southern Illinois University - Carbondale — One particular structural signature of jamming transition has emerged in studies of large systems: *hyperuniformity*, which is the supression of the long wavelength density fluctuations. Also, it has been observed an unusual linear dependence ($S(k) \sim k$) of the structure factor in the low k limit, in monodisperse systems. The small wavenumber region of the static structure factor $S(k)$ for monodisperse systems and the compressibility factor $\theta(k)$ for bidisperse mixtures, are investigated for jammed packings of frictionless spheres with Hooke and Hertz force model, using a high precision data analysis. We have found that the zero-wavenumber intercept $S(k=0)$ and $\theta(k=0)$, as a function of the pressure, are non-zero constant, revealing a finite compressibility. This behavior is relatively insensitive to the force model but shows a dependence on the bidispersity. We have studied also zero-temperature Lennard-Jones glasses which exhibit a finite compressibility that depend weakly on the density of the glass.

Jaime Bohorquez-Ballen
Southern Illinois University - Carbondale