Dynamic structure factor using electron foruce field in lithium

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Accurate x-ray scattering techniques to measure the physical properties of dense plasmas have been developed for applications in high energy density physics. We notice that structure factors determine the physical properties of matter. We prepare to present molecular dynamics simulations based on electron force field (eFF) that determine self-consistently the dynamic ion structure factor and dynamic electronic structure factor in lithium, Our comprehensive data set allows for the calculation of the dispersion relation for collective excitations, and the calculation of the sound velocity. Due to the use of Gaussian wave function in electron force field method, it can improve the traditional electronic structure factor calculation method without the Chihara approximation. The results will be compared with available experimental x-ray and DFT results. We will check for both the liquid metal and warm dense matter domain.