



An investigation of string-like cooperative motion in a strong network glass-former

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The presence of string-like cooperative motion in silica, a strong network glass former, is investigated using large scale molecular dynamics simulations based on a realistic potential. We observe that dynamical heterogeneities and string-like motion in this strong glass-former show similarities with the results obtained by Donati et al. on a fragile model system. We observe that silicon and oxygen atoms are heterogeneously moving in a string-like fashion on different time scales corresponding to the maximum of their respective non-Gaussian parameter. We observe that the average string length increases when the temperature decreases. This result suggests that the length of the strings is not the determinant parameter for discriminating strong from fragile glass formers. We also observe that in silica the excess of cooperativity of mobile atoms is entirely due to the string-like motion of some of them.

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