Short, intermediate and long range order in amorphous ices[1]
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— Water exhibits polyamorphism, i.e., it exists in more than one amorphous state. The most common forms of glassy water are the low-density amorphous (LDA) and the high-density amorphous (HDA) ices. LDA, the most abundant form of ice in the Universe, transforms into HDA upon isothermal compression. We model the transformation of LDA into HDA under isothermal compression with classical molecular dynamics simulations. We analyze the molecular structures with a recently introduced scalar order metric [1] to measure short and intermediate range order. In addition, we rank the structures by their degree of hyperuniformity, i.e.,the extent to which long range density fluctuations are suppressed [2]. [1] F. Martelli, H.-Y. Ko, E. C. Oguz and R. Car, *A local order metric for condensed phase environments*, https://arxiv.org/abs/1609.03123 [2] S. Torquato and F. H. Stillinger, *Local Density Fluctuations, Hyperuniform Systems, and Order Metrics*,Physical Review E, , 041113 1-25 (2003)

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