

Abstract Submitted  
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**Inverse design of voids: clusters of nothing** BETH LINDQUIST, RYAN JADRIC, THOMAS TRUSKETT, University of Texas at Austin — Much work has been done to find and characterize potentials (both pair and many-body) that result in interesting fluid architectures, particularly with respect to clustered fluids. In this work, we inverse design a pair potential possessing competitive attractions and repulsions that forms voidsclusters of empty space. We show that these voids are relatively spherical and reasonably monodisperse in size. We study the behavior of this potential with respect to modulating system density and temperature and we find that, like clusters of particles, these voids are capable of self-assembling into columns, lamellar sheets, as well as a bicontinuous structure. Moreover, we find that this potential can form both clusters and voids, depending on the state point, demonstrating a correspondence between the competitive interactions that are suitable to form these two structural motifs.

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