Simple water-like models in one dimension

A talk by Prof. Dr. Enrique Lomba

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We review the behaviour of a series of one-dimensional lattice models, mostly characterized by the presence of various repulsive ranges, that induce the typical anomalous behaviour present in water like fluids. We will see how the interplay between the attractive and repulsive ranges allows for a fine tuning of the phase diagram that can reproduce qualitatively the behaviour of water and other singular liquids like bismuth. The simplicity of the model enables a better understanding of the essential physics behind the much discussed singular behaviour of tetrahedral and other low coordination liquids.