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Abstract for an Invited Paper
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Recent development of artificial spin ice: a theoretical perspective

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I will discuss recent development of artificial spin ice mainly from the theoretical viewpoint. Specifically, I will talk about the following topics: (1) Physics related to magnetic charge degrees of freedom. The charge-ordered phase of kagome spin ice. Magnetic charge screening in shakti, dice, and pentagonal spin ices. (2) Emergent frustration in shakti spin ice, and other new lattices with vertex frustration. (3) Emergent reduced dimensionality and sliding phase in tetris spin ice. (4) Athermal or relaxational dynamical phenomena of artificial spin ice; disorder; avalanches; return-point memory. (5) Micromagnetic simulations of artificial spin ice. Magnetization reversal. (6) Reconfigurable spin wave band structure in artificial spin ice and Magnonics. (6) Magneto-transport properties of artificial spin ice.