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New and exotic self-organized patterns for modulated nanoscale systems ELIANA ASCIUTTO, CHRISTOPHER ROLAND, CELESTE SAGUI, North Carolina State University — The self-organized domain patterns of modulated systems are characteristic of a wide variety of chemical and physical systems, and are the result of competing interactions. From a technological point of view, there is considerable interest in these domain patterns, as they form suitable templates for the fabrication of nanostructures. We have analyzed the domains and instabilities that form in modulated systems, and show that a large variety of new and exotic patterns – based on long-lived metastable or glassy states – may be formed as a compromise between the required equilibrium modulation period and the strain present in the system. The strain results from topologically constrained trajectories in phase space, the effectively preclude the equilibrium configuration.

Christopher Roland
North Carolina State University

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