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Nucleation and aggregation in 1D with interactions HACHEM SIDI AMMI, Université Mohammed V, Agdal, Faculté des Sciences, Département de Physique, Av. Ibn Batouta, BP 1014 Rabat, Maroc, OLIVIER PIERRE-LOUIS, Labo Spectro. Phys., UJF Grenoble, France, ANNA CHAME, Instituto de Física, UniversidadeFederal Fluminense,Avenida Litorânea s/n, 24210-340 Niterói RJ, Brazil, M'HAMMED TOUZANI, Université Mohammed V, Agdal, Faculté des Sciences, Département de Physique, Av. Ibn Batouta, BP 1014 Rabat, Maroc , ABDELILAH BENYOUSSEF, Université Mohammed V, Agdal, Faculté des Sciences,Département de Physique, Av. Ibn Batouta, BP 1014 Rabat, Maroc, CHAOUQI MISBAH, Labo Spectro Phys, UJF Grenoble, France. — We present a study of the aggregation of interacting particles in one dimension. This situation for example applies to atoms trapped along linear defects at the surface of a crystal, such as crystal steps. It is therefore important for the initial stages of the formation of quantum wires. Simulations are performed with two lattice models. In the first model, the borders of atoms and islands interact in a vectorial manner. In the second model, each atom carries a dipole. These two models lead to qualitatively similar but quantitatively different behavior. In both cases, the final average island size S_f does not depend on the interactions in the limits of very low and very high coverages. For intermediate coverages, S_f exhibits an asymmetric behavior as a function of the interaction strength: while it saturates for attractive interactions, it decreases for repulsive interactions. A class of mean field models is designed, which allows one to retrieve the interaction dependence and the coverage dependence of the average island size with a good accuracy. Ref. H. Sidi Ammi et al, Submitted to Phys.Rev.E.

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