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Microscopic derivation of Ginzburg-Landau theory of weak crystallization IVAR MARTIN, Argonne National Laboratory, SARANG GOPALAKRISHNAN, EUGENE DEMLER, Harvard — Theory of weak crystallization has been applied in the past to understand the relative stability of various crystalline phases. It contains however a number of phenomenological constants and functions, about which typically only generic assumptions are made. We demonstrate how to derive the theory of weak crystallization of metals and metallic alloys starting from the basic mixture of electrons and ions. We find a non-trivial structure of GL parameters, which helps to shed light, in particular, on the stability of quasicrystals.

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