



## Mathematical modeling phase transition in solids

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**Abstract.** We claim that the well-known Stefan condition on the moving inter-phase, accepted in mathematical physics, can not be imposed if energy sources are spatially distributed in the volume. A method based on Tikhonov and Samarskii ideas for numerical solution of the problem is developed. It treats the heat of fusion as an additional term in the expression for thermal capacity of the material. Mathematical modeling of energy relaxation of some processes useful in modern ion beam technologies is fulfilled. Necessity of taking into account effects completely outside the Stefan formulation is demonstrated.

**Keywords:** Heat transfer, phase transition, Stefan problem, finite difference method.

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