Exact solution of a kinetic equation
of one-step processes of growth and decay

© Ikhtier H. Umirzakov

*The Laboratory of Modeling. Kutateladze Institute of Thermophysics of SB of RAS. Prospect Lavrenteva, 1.
Novosibirsk, 630090. Russia. Phone: +7 (383) 354-20-17. E-mail: tepliza@academ.org*

Keywords: *kinetic equation, processes of growth and decay, source, run-off.*

Abstract
The exact solution of the kinetic equation of the one step process of growth (birth) in the presence of sources (runs-off) is found for arbitrary dependence of the growth rate on the number of the state (or size). It is shown that the presence of the source leads to the broadening of the state (or size) distribution. It is also shown that the solution obtained can be used for approximate definition of the size distribution of nuclei for the case of large super-saturation of the vapor. The exact solution of the kinetic equation of the one step process of a decay in the presence of sources (runs-off) is found also for arbitrary dependence of the rate of the decay on the number of the state (or size).