Mathematical Modeling of Track Formation in Superconductor in Cylindrical Coordinates

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Abstract. Further development of the thermal explosion model (TEM) describing track formation processes in high-$T_c$ superconductors is suggested. Information on the temperature dependence of electron thermal diffusivity in YBa$_2$Cu$_3$O$_{7-x}$ is obtained by solving an inverse problem of reproducing measured track radii within the framework of TEM. An influence of the velocity of the incident ion on the damage production in YBa$_2$Cu$_3$O$_{7-x}$ is discussed. For numerical calculations a finite difference method was used.

Keywords: Heat transfer, track formation, finite difference method.

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References