$\mathcal{M}\mathcal{M}\textbf{G}$ *Mathematical Modelling and Geometry*

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 $YBa_2Cu_3O_{7-x}$ 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 $YBa_2Cu_3O_{7-x}$ is discussed. For numerical calculations a finite difference method was used.

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

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