



Contribution ID: 159 Contribution code: TUP159-WEB

Type: **Poster Presentation**

Influence of ionizing beam irradiation on the critical parameters of superconducting elements

Tuesday 20 August 2024 20:40 (20 minutes)

Superconducting materials are more and more widely used in FEL-s accelerators, which proper work strongly depends on their properties, very sensitive to the irradiation effects. The ionizing irradiation occurring in FEL-s influences the subtle structure of superconductors, especially of layered form, damaging it, which effect will have negative influence on superconducting parameters. From the other side created then nano-defects stabilize the magnetic vortices array, improving the critical current. To analysis of these opposite effects and searching for optimum of irradiation concentration is devoted presentation, in which is investigated influence of the ionizing irradiation on critical current, pinning forces and others relevant parameters of superconductors, for various strength of capturing vortex interaction. It will be discussed too influence on the critical temperature of superconductors FEL-s infrared irradiation, leading to new phonons generation. These investigations have therefore great scientific meaning connected to critical current problems in superconductors especially now at large progress of HTc superconductivity. and are closely related to the FEL-s proper work.

Footnotes

Funding Agency

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Session Classification: Poster session

Track Classification: Electron beam dynamics