## FEL2024 - 41st International Free Electron Laser Conference



Contribution ID: 55 Contribution code: TUP055-WEA

**Type: Poster Presentation** 

## Simulation study of nanostructured copper photocathodes

Tuesday 20 August 2024 20:40 (20 minutes)

We present an electromagnetic characterization and optimization study of nanostructured photocathodes for electron gun applications. The study concentrates on photocathodes operated at visible to infrared wavelengths, for which an accurate simulation model is constructed. We apply a customized dispersion model for the cathode material, which can describe the measured permittivity data over a broad frequency range. Various types of nanopatterns are explored in order to understand how different geometrical parameters affect cathode reflectance. The results reveal an optimized model of nanostructured photocathodes, demonstrating improved absorptance at the target laser wavelength. Additionally, the impact of geometrical imperfections on the reflectance spectra is examined.

## **Footnotes**

## **Funding Agency**

Funded by the German Ministry of Research (BMBF) under contract 005K2022

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Session Classification: Poster session

Track Classification: Electron sources