Contribution ID: **2427** Contribution code: **MOPM087** Type: **Poster Presentation**

Permanent helical undulators with strong fields

Monday, 8 May 2023 16:30 (2 hours)

Undulators containing magnetized rare-earth helices can provide a significantly higher oscillatory electron velocity than the widely used planar Halbach undulators. Using Wire Electrical Discharge Machining (WEDM) and combining planar tool with rotary work piece motion, it is possible to manufacture NdFeB helices with a period of 1 mm or less with high accuracy. In this work, we describe the results of manufacturing, theoretical and experimental studying prototypes of micro-undulators in the form of one or two longitudinally magnetized helices. Also shown are more efficient hybrid systems of two longitudinally oppositely magnetized and two steel pre-non-magnetized helices with a field on the axis of the order of 1 T. Such micro-undulators can significantly increase the efficiency of X-ray Free Electron Lasers and Inverse Free Electron Lasers.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary authors: BAMBERG, Eberhard (Viteris Technologies LLC); MAGORI, Eyal (Ariel University); BALAL, Nezah (Ariel University); BRATMAN, Vladimir (Ariel University)

Presenter: BALAL, Nezah (Ariel University)

Session Classification: Monday Poster Session

Track Classification: MC2: Photon Sources and Electron Accelerators: MC2.T15: Undulators and Wigglers