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## **Plasma acceleration-induced betatron radiation: a potential seed for Free Electron Lasers**

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Betatron radiation produced in the plasma acceleration process could be used as seed for Free Electron Laser (FEL). A broad band radiation in the X-ray spectral region is produced by the strong transverse electron oscillation in the plasma channel driven by particle or laser wake field acceleration. Selecting the betatron radiation wavelength matched with FEL resonance, with proper synchronization of the electron and photon pulses in the undulator, the FEL emission will be stimulated. In this paper the scheme that could be adopted in EuPRAXIA@SPARC-LAB complex together with the betatron and FEL emission simulations are presented.

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### **Footnotes**

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