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## **A generalized tool to compute wake potential and impedance from electromagnetic time domain simulations**

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An important problem in present accelerators is the determination of the electromagnetic (EM) wakefields and their effect in the machine performance. These wakefields are generated inside the accelerator vacuum chamber due to the interaction of the particle beam with the surrounding structure. Among the properties that characterize their impact on the machine are the beam coupling Impedance in frequency domain, and the wake potential in time domain. An accurate evaluation of these properties is crucial to effectively predict dissipated power and beam stability. This paper presents an open-source tool that integrates the EM wakefields for general 3D structures and computes the wake potential and impedance for longitudinal and transverse planes. Its usefulness is verified with the open-source EM-solver WarpX and benchmarked with the commercial software CST Studio.

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### **Footnotes**

### **I have read and accept the Privacy Policy Statement**

Yes

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