The Beams and Applications Seminar Series

Using Differential Algebra Techniques for Electromagnetic Field Simulations

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Bldg. 401, Rm. B2100
Friday, May 11, 1:30 pm
Host: Jerry Nolen, PHY

Abstract:New tools based on differential algebraic techniques have been developed recently to perform electromagnetic field simulations. The differential algebra (DA) based techniques have a natural advantage of always producing multipole decomposition of the field. And, due to the use of high computation order high accuracy can be achieved with relatively large step sizes. These techniques can be combined with the existing DA based transfer map extraction tools to obtain the transfer map of realistic fields. All these tools have been implemented using the DA framework available in the arbitrary order beam physics code COSY Infinity.

Application of these techniques to the simulation of the air-core type superconducting quadrupole triplet for the BigRIPS separator and the conceptual design of an elliptic cross section quadrupole magnet with tunable high order multipoles will be discussed.

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