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An overview of the multiple simulation tools developed in the framework of the S2C2 project

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So far the simulation tools and techniques available at IBA were all designed for isochronous cyclotrons. As a consequence, the fast development of the S2C2 was possible only through a close collaboration with AIMA development (Nice, France), who is a key driver in the design of the accelerator. Recently, IBA has developed and improved its existing beam simulation codes, wrote new ones and built its own synchrocyclotron models. Dedicated codes have been written to study the behaviour of the synchronous particle and the longitudinal motion. The 3D tracking code (AOC) has been extended in order to include pulsed RF. Other specific codes have also been developed, e.g. to study the orbit centring and magnetic shimming. Various magnetic models were made in opera2D and opera3D using both the pre-processor and modeller. Through the use of various solvers, these models are useful to study and understand a large number of features of the cyclotron and how design options interact with each other (Eddy currents, median plane errors, forces). The magnetic field mapping of the S2C2 will be done with the search coil method which also required new tool-development.

Please indicate preferred presentation (poster or talk?)

talk

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