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## Comparison between Cash-Karp (CK) and Boris Push (BP) for propagating particles in CRPropa

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Numerical simulations of the propagation of charged particles through magnetic fields, solving the equation of motion can be achieved in principle with many different algorithms. There are, however, an increasing number of studies that have found that there are two algorithms, which work in general best for propagating charged particles within a magnetic field. These two algorithms, namely the Cash-Karp (CK) and the Boris Push (BP), are now implemented in CRPropa. Both are compared and evaluated within this presentation.

It is demonstrated that the Boris Push provides a faster method for advancing charged particles within a magnetic field while it even preserves the components of the momentum.

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