

# Ion optical simulation for the NEXT solenoid separator

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The NEXT project aims to study Neutron-rich, EXotic, heavy nuclei produced in multi-nucleon Transfer reactions[1]. Transfer products of interest will be focused and separated from unwanted by-products and unreacted primary beam by a 3T solenoid magnet with an 87-cm wide bore.

We developed a Python code to simulate the traces of ions through the magnetic field of the solenoid magnet. The purpose of the simulation is to define the optimum settings of the separator in order to acquire the highest transmission yields and strongest background suppression.

In my contribution, I will explain the different steps of the simulations of realistic ion trajectories through the magnetic field. I will present the results obtained for a few selected multinucleon transfer products which are of interest for nuclear astrophysics.

## References

[1] J. Even et al., Atoms 10 (2022) 59.

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