

A graphic featuring a glowing blue DNA double helix structure against a dark blue background with a grid pattern. The helix is composed of two intertwined strands with bright blue spheres at the base pairs. The text "NSD GRADEL FUSION" is written in white, bold, sans-serif capital letters at the top left of the graphic.

# NSD GRADEL FUSION

## Job posting

Student R&D Project (3-6 Months)

### Development of a Conservative Collision Algorithm for Charge Exchange Reactions in DSMC

Sufficiently rarefied gases and plasmas are commonly simulated with so-called kinetic approaches in which the flow is not modelled as a continuum but as a collection of a huge number of particles. To solve technically relevant problems, non-deterministic approaches like Direct Simulation Monte Carlo (DSMC) for gases are regularly used and are still subject to continuous improvements.

Gradel sàrl is developing an own 3D fully kinetic particle solver for the efficient simulation of highly rarefied gas and plasma flows. Those flows are not only interesting for our own high-tech products (nuclear fusion based neutron sources, and plasma propulsion devices for space applications), but also for other industrial and academic research fields and applications.

Within the scope of this project the student will study the related physics and implement the non-deterministic model approach of a noble gas based charge exchange process into an existing code. The implementation is to be verified and eventually validated against experimental data.

Interested students with a C++ programming experience and a background in physics, engineering, computer science or similar should send their application (including CV) to

Dejan Petkow (Dr.-Ing.)

Head of NSD Department

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