# The Oskar3 project

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**Abstract.** The main goal of the project is to improve algorithms for 3d semiconductor device simulation by exploiting the nice properties of the analytic problem. Main areas of interest from the algorithmic point of view are:
a) discretiztions, especially cases requiring non Boltzmann statistics;
b) solving linear systems;
c) construction of anisotropic Delaunay grids (Gajewski: 'the best convergence acceleration is a good grid').

The goal is understanding and solving selected application problems of research interest. Collaborative, true experts in the special field of application and extreme requirements with respect to at least one of the points a) to c) are are essential ingredients of a good obstacle course training brains. We use
A) silicon sensors for high energy and astro physics (high precision, huge volumes, every design is very different and time scales allow discussions - related to b, c);
B) VCSEL hetero structures (representatives of complex heterostructures with exotic materials, mainly related to a);
C) organic semiconductors (the hope for a black paint producing electricity over five years with 10 % efficiency at nearly no cost—for the presently used models no limit of practical interest results in the Boltzmann case, hence a)
to adjust the focus.

A discussion of the used and unused mathematical properties will be given, some examples will help to judge the status reached at WIAS.