

The new generation of plasma (discharge) codes

Lightning is one of the most experienced and most severe phenomena on Earth. We at the Physics Department of TU Dortmund study various phenomena related to lightning ranging from the very early microscopic conditions to macroscopic manifestations. One way to study lightning and electric discharge plasmas in general are computer calculations which allow to simulate laboratory experiments or natural discharge phenomena under controlled circumstances.

We are part in the upcoming pre-exascale LUMI [<https://www.lumi-supercomputer.eu/>] machine and are aiming to develop the newest plasma codes to simulate discharge plasmas on the architecture of this and other high-performance computing machines.

The project consists of literature study about the nature of discharge plasmas as well as their numerical treatment and the development of necessary codes for the architecture of LUMI to simulate the emergence and propagation of luminous discharge channels. The main goal of the project is to create the newest generation of discharge plasma codes to perform the most realistic simulations ever.

If we have caught your attention, please contact christoph.koehn@tu-dortmund.de to obtain more information.