



STÉPHANE BRULL

From France to Sweden



Project: **Kinetic and hyperbolic equations in rarefied gases and plasma physics**

Research topic: **Mathematics**

Swedish Institution: **Chalmers / Karlstad University**

French Institution: **Institut Polytechnique de Bordeaux / CNRS**

Dates of mobility: **06/10/2016 to 03/11/2016**

Program: **SFVE-A (ex-TOR)**



PRESENTATION

[Stéphane Brull](#) is Associate Professor in Applied Mathematics at the [Institute of Mathematics of Bordeaux](#) at the Graduate School of Engineering [Bordeaux INP](#) and the École Nationale Supérieure d'Électronique, Informatique, Télécommunications, Mathématique et Mécanique of Bordeaux ([ENSEIRB-MATMECA](#)). His research works are mainly devoted to kinetic and hyperbolic equations applied to rarefied gases and plasma physics. He obtained his PhD in Applied Mathematics from the [University of Aix-Marseille](#) in 2006. He was habilitated (HDR) in 2012 from the [University of Bordeaux](#).

ACTIVITIES IN SWEDEN

Stéphane Brull started his mobility at [Chalmers University of Technology](#) in Göteborg. He was hosted by the [Kinetic theory team](#) of the [Department of Mathematical Sciences](#). He exchanged views with [Prof. Mohammad Asadzadeh](#), with whom he planned to study a finite element approach to the Vlasov-Poisson-BGK equation by introducing a numerical method. He also met with [Leif Arkeryd](#) and talked about descriptive models of evaporation/condensation phenomena.

He also held a seminar on the construction of BGK models by principles of entropy minimization under constraints, with ensuing discussions with among others [Alexei Heintz](#) on kinetic polyatomic models used to study received heat fluxes during the re-entry of bodies in the upper atmosphere.

After this, Brull went to [Karlstad University](#), where he met with [Yosief Wondmagegne](#), [Mirella Vinerean](#) and [Niclas Bernhoff](#) from the [Department of Mathematics and Computer Science](#). He discussed BGK models for complex gases with Wondmagegne, the generalization of an article with Bernhoff, and a guest professorship of [Alexander Bobylev](#) in Bordeaux. At Karlstad University, he held a presentation during a seminar at the Department of Mathematics and Computer Science. Upon his return to Chalmers, he held a presentation during a seminar of Applied Mathematics on non-conservative hyperbolic systems and pursued his collaboration with Asadzadeh by editing an article.