## Abstract Submitted for the DFD15 Meeting of The American Physical Society

Interaction between electrically charged droplets in microgravity<sup>1</sup> BRANDENBOURGER, HERVE CAPS, JEROME HARDOUIN, GRASP, Universit de Lige, Lige, Belgium, YOUEN VITRY, Beams, Universite Libre de Bruxelles, Bruxelles, Belgium, BERNARD BOIGELOT, Department of Electrical Engineering and Computer Science, University of Liege, 4000 Liege, Belgium, STEPHANE DORBOLO, GRASP, Universit de Lige, Lige, Belgium, GRASP TEAM, BEAMS COLLABORATION — The past ten years, electrically charged droplets have been studied tremendously for their applications in industry (electrospray, electrowetting,...). However, charged droplets are also present in nature. Indeed, it has been shown that the droplets falling from thunderclouds possess an excess of electric charges. Moreover, some research groups try to use the electrical interaction between drops in order to control the coalescence between cloud droplets and control rain generation. The common way to study this kind of system is to make hypothesis on the interaction between two charged drops. Then, these hypothesis are extended to a system of thousands of charged droplets. Thanks to microgravity conditions, we were able to study the interaction between two electrically charged droplets. In practice, the charged droplets were propelled one in front of the other at low speed (less than 1 m/s). The droplets trajectory is studied for various charges and volumes. The repulsion between two charged drops is correctly fitted by a simple Coulomb repulsion law. In the case of attractive interactions, we discuss the collisions observed as a function of the droplets speed, volume and electric charges.

<sup>1</sup>Thanks to FNRS for financial support.

Martin Brandenbourger GRASP, Universit de Lige, Lige, Belgium

Date submitted: 27 Jul 2015 Electronic form version 1.4