

of Physicists

Canadian Association Association canadienne des physiciens et physiciennes

Contribution ID: 1772 compétition)

Type: CLOSED - Oral (Student, In Competition) / Orale (Étudiant(e), inscrit à la

## Bubble growth studies in superheated liquids for the **PICO** experiment

Monday 29 May 2017 16:45 (15 minutes)

Astronomers have observed, through galaxy rotation curves, that our understanding of the dynamics at the scale of galaxies is rather incomplete; these observations amongst others led to the conclusion that there is something missing in our model or lacking in our understanding of the universe. A possible solution is the addition of dark matter, which can only interact very weakly and through gravity. As dark matter barely interacts with anything as it is extremely difficult to detect; it requires experiments with extremely low backgrounds and either extremely large detectors or extremely long exposure times or a combination of both. PICO is one of many dark matter search experiments, it utilises acoustic amplification of minute energy deposition within a superheated liquid to detect nuclear recoils from dark matter particles. Phenomenologically, we know different background particle interactions generate different acoustics, which we score with a parameter. All background particles will have known characteristics and a known distribution of scores, therefore we can infer that something is not one of the backgrounds. The bubble growth is responsible for the acoustic signal, therefore investigating its mechanics may enhance our discriminative tools.

Author: Mr LE BLANC, Alexandre (Laurentian University) Presenter: Mr LE BLANC, Alexandre (Laurentian University) Session Classification: M4-3 Dark Matter I (PPD) | Matière sombre I (PPD)

Track Classification: Particle Physics / Physique des particules (PPD)