



DEPARTMENT OF
PHYSICS & ASTRONOMY
COLLOQUIUM SPEAKER SERIES



**Dark matter:
The Hunt for the
Unknown**

Dr. Marie-Cécile Piro (Cap
Lecture), University of Alberta

**Tues, February 11, 2020
1:40-2:55PM
SA6010**

**Free. Everyone welcome.
No RSVP required.
Donuts and coffee.**

Despite all of our advancements in science, physics, and astronomy, we still try to understand what approximately 80%-90% of the content of the universe is. However, astronomical and cosmological observations strongly suggest the presence of a new form of matter different from the ordinary matter that surrounds us and which would be five times more abundant named "Dark Matter."

The only visible effects of its existence are its gravitational influence on ordinary matter composing galaxies, but it may be detectable in particle physics experiments. But, at present, it is still invisible and undetectable directly. Does it exist or not? Do we need to change our theories and create new ones? This makes it one of the greatest unsolved mysteries of our universe.

Even if its direct detection escaped to the scientific community in our time, dark matter remains a fundamental concept that would explain how our universe formed and would provide a unique chance to discover physics beyond the standard model.

Currently, many experiments around the world are searching for dark matter, and we hope that in the near future, we will solve this mystery and understand its properties. After reviewing in detail why dark matter matters and the strong evidence of its existence, I will give an overview of the numerous direct dark matter searches with an emphasis on our involvement in Canada and the challenge, we are now facing by reaching such unprecedented level of sensitivity that never-before-seen background signals must be now considered.

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