



**Conference on Long-Range Interacting Many-Body Systems:
from Atomic to Astrophysical Scales
(25 - 29 July 2016)**

Venue: ICTP Leonardo da Vinci Building - Budinich Lecture Hall
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Title:

Introduction to long range interactions: a theoretical physicist's view

Speaker:

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Abstract:

I will present an introduction to the physics of long range interacting systems, necessarily biased by my own preferences. The lectures will consist of three main parts:

- i) On the definition of long-range interactions, and many examples;
- ii) Equilibrium statistical mechanics;
- iii) Kinetic theory and out of equilibrium statistical mechanics.

The main emphasis will be on "universal" features implied by long-range interactions in very different physical fields. If time permits, the last part of the 2nd lecture will be devoted to a more personal work, on bifurcations for stationary states of Vlasov equations

(in collaboration with David M'etivier and Yoshiyuki Yamaguchi).