Ca' Foscari
University
of Venice

**Department of
Molecular Sciences
and Nanosystems**

Gli organizzatori offriranno
coffee & cookies ai partecipanti

References:
* V. Volterra, *Variazioni e fluttuazioni
  del numero d'individui in specie
  animali conviventi*, Mem. R. Accad.
  Naz. dei Lincei 2, 31 (1926)
* J.G. Charney, R. Fjortoft and J. von
  Neumann, *Numerical integration
  of the barotropic vorticity equation*
  Tellus 2, 237 (1950)
* E.N. Lorenz Deterministic
  nonperiodic flows, J. Atmos. Sci.
  20, 130 (1963)
* A. Renyi *Dialogues on
  Mathematics*, Holden-Day: San
  Francisco, CA, USA, 1967.
* M. Baldovin, F.Cecconi, M. Cencini,
  A. Puglisi and A. Vulpiani, T*he
  Role of Data in Model Building
  and Prediction: A Survey Through
  Examples Entropy*, 20, 807 (2018)

Theory and Data in Model Building: from Volterra to Machine Learning

20 giugno 2024, ore 11.00
Room Delta 2A, Delta Building
Scientific Campus, Via Torino 155 - Mestre

Sarà possibile seguire il seminario anche da remoto, collegandosi al seguente link:
https://unive.zoom.us/j/82439306575 | Password: seminar1

Prof. **Angelo Vulpiani**
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It is not an exaggeration to say that models are unavoidable in scientific practice and that it is impossible to have real science without them. Even top theories (e.g. electromagnetism or quantum mechanics) are nothing but sophisticated models. The talk is devoted to "true" models which do not pretend to offer a general description, in particular in the cases where the top theories are not very efficient and can be classified into 4 large classes: I- Oversimplified models; II- Models by analogy; III- Large scale models; IV- Models from data. In class I there is the celebrated Lorenz model; the Lotka-Volterra system is in class II, and it is at the origin of biomathematics. Among the models in class III, we have the effective equations used, e.g., in meteorology and engineering, where only "relevant variables" are taken into account. In class IV we find the most interesting (and difficult) problem: the building of models just from data without a reference theoretical framework.