Lunedì 19 settembre 2016, alle ore 15.30

nell'aula AP1 del *Dipartimento di Fisica e Chimica,*
Viale delle Scienze, Edificio 18, Palermo

il Prof. Andrew Morozov

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terrà un seminario su

Revealing new mechanisms of stabilising trophic control in planktonic food webs with eutrophication

Abstract

Classical models describing predator-prey interactions generally predict large amplitude oscillations of species densities under eutrophic conditions, i.e. when the resource supply for the prey is high. This may result in collapse and extinction of species since their densities would eventually drop to extremely low values; also this may lead to an ecological regime shift. Such theoretical predictions, however, are often at odds with empirical data. Indeed, there exist a large number of examples of planktonic food webs (both in lakes and in the ocean) in which the species densities remain low despite a high nutrient supply across the year. Various mechanisms have been proposed to explain such stability (e.g. considering food selectivity of predators, introducing structuring within prey population, etc), but this phenomenon still remains far from full understanding. In this talk, I will discuss several novel mechanisms of stabilisation of planktonic food webs models with high eutrophication. This will include spatial heterogeneity of environment, fast food-dependent vertical movement of zooplankton, physiological structuring within plankton populations, spatial scale-dependence of zooplankton functional response and sensitivity of the functional response to its mathematical parameterisation. The modelling framework is based on integro-differential reaction-diffusion equations. Finally, I show that the available empirical data on plankton obtained by my colleagues from the Shirshov Institute of Oceanology (Moscow, Russia) support the suggested mechanisms of stabilisation.