

PRVOUK

The Charles University Research Development Schemes (known under the Czech acronym PRVOUK) have been providing institutional support for research at Charles University 2012 - 2016.

For the Center for Theoretical Study was agreed the programme '**Theoretical Study of Complex Phenomena**' (P22).

Coordinator of the programme is prof. David Storch, Director of the Center for Theoretical Study.

Brief synopsis of the programme:

The long-term research programme of the Centre for Theoretical Study (CTS) is devoted to the study of phenomena that, due to their complexity, overreach the conceptual frameworks of individual disciplines, and thus demand multidisciplinary and transdisciplinary collaboration. Examples of such phenomena include the structure and dynamics of the biosphere at large spatial and temporal scales; the dynamics of natural and cultural landscapes and their interaction with the development of human societies; the growth of cities and the emergence of suburban space; collapses of complex systems and communities; or collective decision-making in developed societies. Our approach to the study of complex phenomena is quite unique (within Charles University as well as within the international research community), as it is not limited only to detailed explorations from the point of view of individual disciplines and the subsequent synthesis of these particular views, but also encompasses theory building, i.e. the establishment of general frameworks through which it is possible to interpret complex phenomena. We collaborate with many research groups abroad, especially in the USA and the UK, but also in other European countries. Complexity is usually studied from the mathematical perspective by means of computer simulations. Although we adopt this approach in the CTS as well, perhaps more important for us is examining the common features of complex phenomena in different disciplines. We have published many papers on these topics in renowned journals, including multidisciplinary journals such as Nature or PNAS, and several books and book chapters (published also by international publishers, e.g. Cambridge University Press or Wiley-Blackwell). The team in the CTS is characterized by transdisciplinary interests combined with a high level of expertise in individual fields of study, and is being continuously renewed by recruiting young researchers. The further development of the theory of complex phenomena at the CTS thus promises major achievements in both research and teaching.

Synopsis of the previous programme 'Theoretical research on complex phenomenons in physics, biology and human sciences' can be found [here](#).