

### **Abstract**

Ever since Alan Turing gave us a machine model of algorithmic computation, there have been questions about how widely it is applicable (some asked by Turing himself). Although the computer on our desk can be viewed in isolation as a Universal Turing Machine, there are many examples in nature of what looks like computation, but for which there is no well-understood model. In many areas, we have to come to terms with emergence not being clearly algorithmic. The positive side of this is the growth of new computational paradigms based on metaphors for natural phenomena, and the devising of very informative computer simulations got from copying nature. This talk is concerned with general questions such as:

- Can natural computation, in its various forms, provide us with genuinely new ways of computing?
- To what extent can natural processes be captured computationally?
- Is there a universal model underlying these new paradigms?