



# NATO Advanced Research Workshop

RPTU

## Functional Spintronic Nanomaterials for Radiation Detection and Energy Harvesting



### **Novel computing methods utilizing magnetic systems**

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Various magnetic systems are promising candidates for building of non Von Neumann calculation systems using different approaches. Those ideas can be grouped in so-called natural computing methods, where a specific problem is mapped onto the physics of a system. The system then evolves, either naturally or under control, towards its ground state, which is the solution of the given problem. Among building blocks for such systems are magnetic tunnel junctions, spin Hall nano-oscillators and antiferromagnetic spin hall oscillators. Those magnetic systems can be used in various calculation schemes, namely Ising machines and probabilistic computing schemes. In this paper I will provide an overview of recent trends in novel computing ideas with magnetic systems and show some promising results regarding antiferromagnetic spin hall oscillators for probabilistic computing.