

## Kvantni spinski sistemi

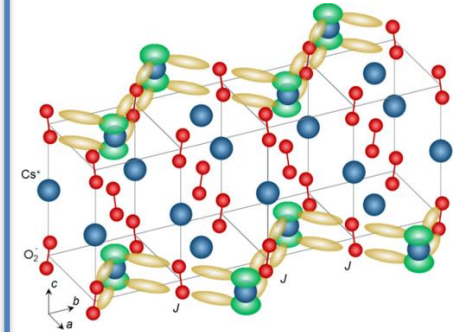
**Eksperimentalna fizika na kvantnih spinskih sistemih, ki so temelj kvantnemu računalništvu in kvantni komunikaciji. Cilje je razumevanje osnovnega kvantnega spinskega stanja, vzbuditev iz takega stanja, spinske dinamike, spinskega dekoherenčnega časa ter realizacija eno-kubitnih rotacij na realnih fizikalnih sistemih.**

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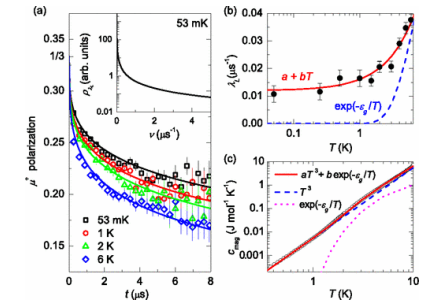
### Izbrana dela v zadnjem času

- [Phonon-Modulated Magnetic Interactions and Spin Tomonaga-Luttinger Liquid in the p-Orbital Antiferromagnet CsO<sub>2</sub>](#), *Phys. Rev. Lett.* **115**, 057205 (2015).
- [One-dimensional quantum antiferromagnetism in the p-orbital CsO<sub>2</sub> compound revealed by electron paramagnetic resonance](#), *Phys. Rev. B* **91**, 174419 (2015).
- [Frustration-induced nanometre-scale inhomogeneity in a triangular antiferromagnet](#), *Nature Comm.* **5**, 3222 (2014).
- [Persistent Spin Dynamics Intrinsic to Amplitude-Modulated Long-Range Magnetic Order](#), *Phys. Rev. Lett.* **109**, 227202 (2012).
- [Symmetric and antisymmetric exchange anisotropies in quasi-one-dimensional CuSe<sub>2</sub>O<sub>5</sub> as revealed by ESR](#), *Phys. Rev. B* **84**, 184436 (2011).
- [Unconventional Magnetism in a Nitrogen-Containing Analog of Cupric Oxide](#), *Phys. Rev. Lett.* **107**, 047208 (2011).

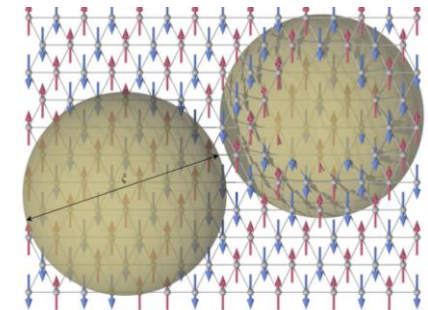
### najnovejši rezultati



Struktura CsO<sub>2</sub> pri nizkih temperaturah zaradi orbitalnega urejanja kaže kvantni magnetizem (PRL 2015, PRB 2015).



Meritve v mK področju razkrijejo kvantne spinske fluktuacije v sistemu FeTe<sub>2</sub>O<sub>5</sub>Br (PRL 2012).



Nehomogeno stanje na trikotni mreži Mn<sup>3+</sup> spinov (Nat. Comm. 2014).

## Quantum spin systems

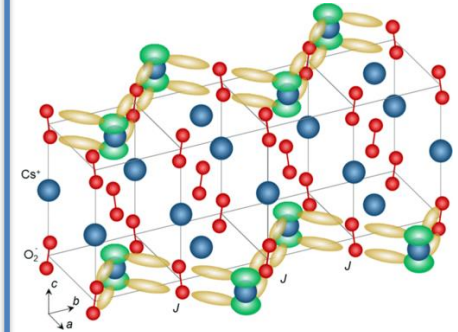
**Experimental physics of quantum spin systems in connection to quantum computing and quantum communication. The goal is to understand the quantum spin ground states, excitations from such states, spin dynamics, spin decoherence mechanisms and the realization of single-qubit rotations on realistic model compounds.**

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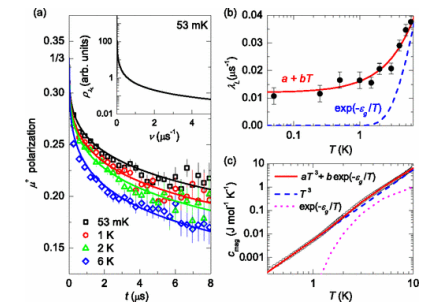
### Selected recent publications

- [Phonon-Modulated Magnetic Interactions and Spin Tomonaga-Luttinger Liquid in the p-Orbital Antiferromagnet CsO<sub>2</sub>](#), *Phys. Rev. Lett.* **115**, 057205 (2015).
- [One-dimensional quantum antiferromagnetism in the p-orbital CsO<sub>2</sub> compound revealed by electron paramagnetic resonance](#), *Phys. Rev. B* **91**, 174419 (2015).
- [Frustration-induced nanometre-scale inhomogeneity in a triangular antiferromagnet](#), *Nature Comm.* **5**, 3222 (2014).
- [Persistent Spin Dynamics Intrinsic to Amplitude-Modulated Long-Range Magnetic Order](#), *Phys. Rev. Lett.* **109**, 227202 (2012).
- [Symmetric and antisymmetric exchange anisotropies in quasi-one-dimensional CuSe<sub>2</sub>O<sub>5</sub> as revealed by ESR](#), *Phys. Rev. B* **84**, 184436 (2011).
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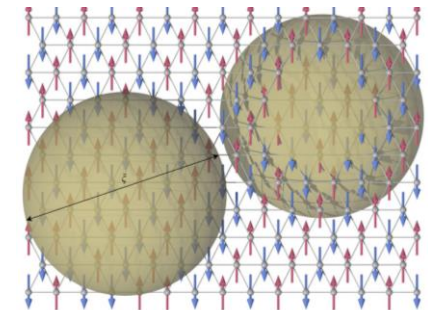
### Latest results



Structure of CsO<sub>2</sub> at low temperatures where due to the orbital ordering quantum magnetism is observed (PRL 2015, PRB 2015).



Measurements in the mK region reveal quantum spin fluctuations in multiferroic FeTe<sub>2</sub>O<sub>5</sub>Br (PRL 2012).



Inhomogeneous spin state on triangular lattice of Mn<sup>3+</sup> spins (Nat. Comm. 2014).