

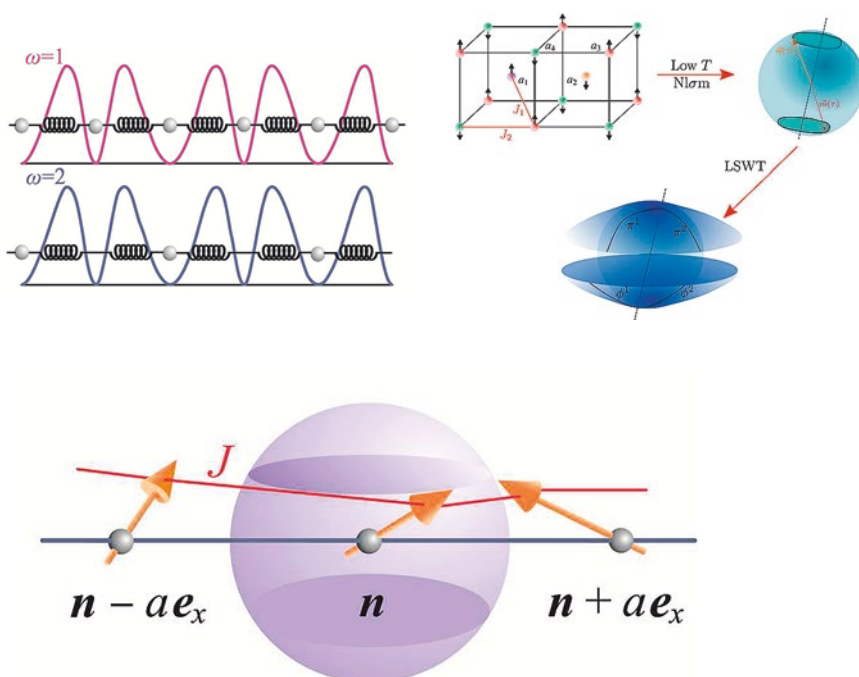
Theoretical Physics Group

Quantum theory of magnetism, Spin qubits, Nonlinear dynamics, Fractional calculus, Enviromental modeling

The group's main areas of research include theoretical condensed matter physics, especially quantum theory of magnetism, nonlinear dynamics in condensed matter systems, quantum phase transitions and quantum informatics. The research is based on standard models and their generalizations: Heisenberg model, Ising model, Frenkel – Kontorova model, etc. The results are obtained with different perturbative and nonperturbative methods: Green's function method, Monte Carlo simulations, diagram technique, etc.

On the other hand, problems including wave and heat conduction in nonlocal and memory sensitive materials are modeled with the help of fractional calculus.

Finally, one member of theoretical physics group investigates environmental modeling. This research is based on WRF, WRF-Chem and CALPUFF models.



SELECTED PROJECTS

Title: *The influence of elementary excitations and conformations to physical properties of the new materials based on strongly correlated low-dimensional systems (OI 171009)*

Type: National project

Duration: 8+ years

Contact person: Dr Milan Pantić (mpantic@df.uns.ac.rs)

Title: *Perturbative and nonperturbative aspects of complex many body systems (APV 114-451-2201)*

Type: Provincial project

Duration: 4 years

Contact person: Dr Slobodan Radošević (slobodan@df.uns.ac.rs)

Title: *Analytical, numerical and statistical tools in mathematical models (APV 114-451-2894)*

Type: Provincial project

Duration: 4 years

Contact person: Dr Sanja Konjik (sanja.konjik@dmi.uns.ac.rs)

Group members

- Dr Milica Pavkov – Hrvojević, Full Professor
- Dr Milan Pantić, Full Professor
- Dr Dušan Zorica, Associate Professor
- Dr Milica Rutonjski, Assistant Professor
- Dr Slobodan Radošević, Associate Professor
- Dr Zorica Podračanin, Associate Professor
- Dr Petar Mali, Assistant Professor

COLLABORATIONS

- Institute of nuclear sciences – Vinča, Belgrade, Serbia
- Joint Institute for nuclear research, Bogoliubov Laboratory for theoretical physics, Dubna, Russia
- Mathematical Institute SANU, Belgrade, Serbia

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