

PHYS-726

Introduction to Frustrated Magnetism

Mila Frédéric

| Cursus | Sem. | Type |
|---------------|-------------|-------------|
| Physics | | Obl. |

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| Language of teaching | English |
| Credits | 2 |
| Session | |
| Exam | Oral |
| Workload | 60h |
| Hours | 28 |
| Courses | 28 |
| Number of positions | 30 |

Frequency

Every 3 years

Remark

Every 3 years / Next time: Spring 2019

Summary

To provide an introduction to all aspects of the rapidly evolving field of frustrated magnetism: 1) New paradigms: spin liquids, spin ice, topological order, 2) Basic models and methods 3) Experimental realizations

Content

- 1) Introduction: definition and overview of frustration in magnetism
- 2) Basic models
- 3) Classical frustrated magnets: ground state degeneracy and ground state correlations
- 4) Order by disorder: ordering by thermal or quantum fluctuations
- 5) Spontaneous breaking of translational symmetry: valence-bond solids, magnetization plateaux
- 6) Broken SU(2) symmetry without magnetic order: nematic order
- 7) Spin liquids: Resonating-Valence Bond liquids, algebraic order, topological order
- 8) Conclusion: open issues and perspectives

Learning Outcomes

By the end of the course, the student must be able to:

- Carry out research dealing with frustrated magnetism.