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The research interests of the particle physics theory group are centered around phenomenological aspects of the standard model and its extensions and as such are closely related to the research programme at future high energy colliders, in particular the LHC.

The main directions include the search for new phenomena (the Higgs boson, supersymmetry, the quark-gluon plasma) and precision calculations within the standard model (electroweak sector and quantum chromodynamics) and its supersymmetric extensions.

They involve the computation of physical observables that can be compared to experimental results (present or future) as well as the development of new computational techniques appropriate to the kinematic region accessible at the new TeV colliders.

Properties of dark matter candidates in new physics models and consequences for astroparticle and collider experiments are also studied.

The main research topics include:

- Standard model and beyond, Higgs, supersymmetry and implications for the LHC and future linear colliders;
- Dark matter candidates: astroparticle physics and collider physics interplay;

- Quantum chromodynamics and inclusive processes at large energy/momentum transfer;
- Finite temperature field theory, quark-gluon plasma, heavy ion collisions;