SWEATERS (Space Weather Ena Radiation Sensors) project
Specific interests and strategy

MPGD operating at low-pressure mainly focused on the detection of Energetic Neutral Atoms (ENA) in space (H, O @ 1-100 keV)

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Main simulation interests, strategy and tools

A. **Ionization and scintillation processes of 1-100 keV Ions in gas mixture (Ar, CO_2) in Drift region**
   - Ionization: to develop a tool to extract tracks data & graphs from multiple TRIM runs with different ions, energies, mixtures,…
   - Scintillation: to investigate and simulate the scintillation yield due to Argon recoils (if any!)

B. **Physical processes in the avalanche region at low pressures (<100mbar)**
   - Current Garfield++ version is ok to simulate our MPGD at NTP, not at low pressure => we had to evolve Garfield++ to include: Collision steps handling, Detailed deexcitation mode, Photoelectric induced secondary electrons, Ion induced secondary electrons, Breakdown handling
   - We had to tune some Garfield models to have a good match with our results: we need to investigate the underlining physical processes and parametrization

C. **Induced signals on MPGD resistive strips and related DAQ analysis**
   - To enforce works on “Simulating Signal Formation in Detectors with Resistive Materials” (D. Janssens)
   - To reproduce lab data from our analogues front-ends