Stau Search in IceCube

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What is this contribution about?

- Excess event search for staus, supersymmetric partner to the tau lepton with
  the neutrino telescope IceCube

Why is it relevant/ interesting?

- First experimental study using an excess event search to constrain the stau
  mass using a neutrino observatory.
- Feasibility study of a novel approach

What have we done?

- Simulation of stau signal strength at the detector (production and propagation)
- Monte Carlo simulation of signal acceptance of the detector (effective area)
- Using previous event selection and its atmospheric neutrino induced muons
  as background
- Sensitivity calculations with the simulated rates of signal and background

What is the result?

- With current state of the analysis and neglecting systematic uncertainties,
  IceCube would be able to exclude stau masses < 63.2 GeV
- Feasibility proven; however, improvements are necessary to compete with
  limits of collider experiments