Luminescence of water and ice

a novel detection channel for neutrino telescopes

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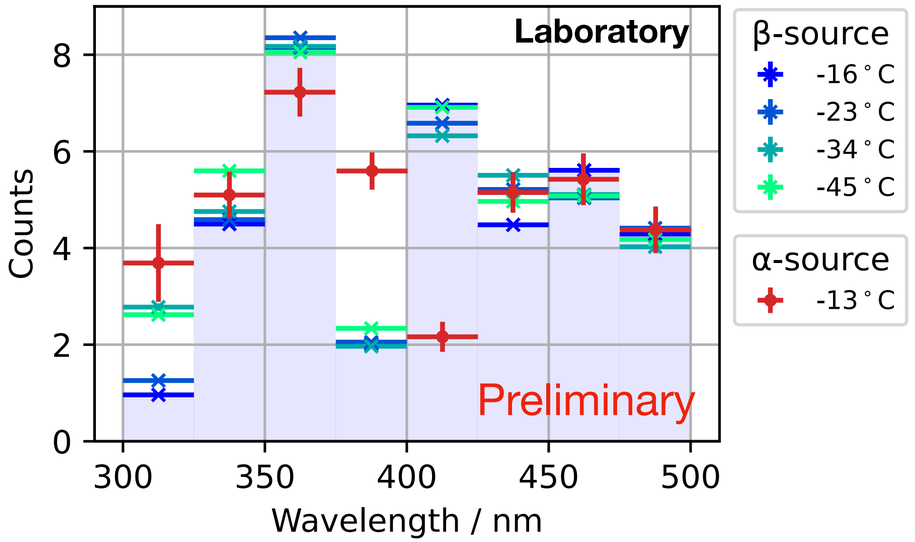
What is it about:
Measurements of luminescence properties in water and ice @ South Pole and in laboratory

- light yield
- decay kinetics
- spectrum
- quenching

Spectrum of luminescence of ice



Why relevant:

- the huge volume of large neutrino telescopes makes them ideal for rare event searches
- but these water-Cherenkov detectors rely on Cherenkov light only
- luminescence light would enable searches for other particles in other parameter ranges

Conclusions:

- Simulations of Magnetic Monopoles and Q-balls show that luminescence is a suitable new detection channel
- First search for Magnetic Monopoles yielded World leading sensitivities (POS 534, DM 16 Jul 18:00h)