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TRIUMF Colloquium - Core-collapse supernovae as probes of (not only) non-standard neutrino physics

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Core-collapse supernovae are one of the most complex phenomena in the Universe. Not only are they one of the production sites of the heavy elements that enable the existence of life, but their cores are also one of the densest environments we can probe, albeit indirectly. Core-collapse supernovae are also among the most spectacular and efficient neutrino factories. Detecting these neutrinos can allow us to probe physics in extreme conditions inaccessible on Earth. In this talk, I will discuss how we can prepare for the next nearby supernova neutrino detection to extract as much information as possible from the neutrino signal. I will also talk about how observing neutrinos from all the past collapses in our Universe –the diffuse supernova neutrino background - can help us better understand the supernova population and may provide hints about physics beyond the Standard Model.

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