

SNEWS Meeting @ Neutrino2020

Friday, June 19, 2020 - Saturday, June 20, 2020

Zoom

Book of Abstracts

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Signal Prediction - Modeling / 2**Analytic Model for Supernova Neutrinos**

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We report the status of upgrading the analytic supernova model of Mueller et al. (2016) with a focus on neutrino emission. Our simple model is calibrated to existing numerical supernova simulations and will include the dependence on the mass density property of the progenitor to yield neutrino predictions within seconds.

Signal Prediction - Modeling / 3**Manibrata Sen**

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Signal Prediction - Modeling / 4**Laurie Walk****Signal Prediction - Modeling / 5****Tommy Lam**

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Alert Formation - Triangulation and Pointing / 7**Introduction to session**

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Alert Formation - Triangulation and Pointing / 8**Pointing based on anisotropic interactions**

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Pointing confidence area estimation

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Time measurements from individual experiments

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Pointing with shape information

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Systematic uncertainties discussion

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Discussion on Next Steps

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Pointing with presupernova neutrinos

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Shape analysis and combination of presupernova signals

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Pre-supernova neutrino alert with SNO+

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Scimma and Hopskotch

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Significance-based Alerts

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Discussion

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Open discussion (everyone).

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Sensitivity of KM3Net to CCSNe: Online and Offline Performance

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Detector response of KM3Net, offline implementation

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Sensitivity of RES-NOVA to supernova neutrinos

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Sensitivity of LZ to supernova neutrinos

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Preparing to Observe the Next Galactic Supernova with IceCube

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The next Galactic supernova will be a historic opportunity for multi-messenger astronomy. A core collapse will produce a neutrino burst visible up to half a day before electromagnetic radiation from the explosion, providing an early warning for optical follow-up and valuable insight about the proto-neutron star. Since local supernovae are exceedingly rare, it is critical that neutrino detectors provide prompt alerts after the arrival of a burst. The IceCube Neutrino Observatory is currently the world's largest neutrino detector and is operating with >99% uptime, making it a crucial component of the worldwide network of detectors known as the SuperNova Early Warning System (SNEWS). We will discuss the sensitivity of IceCube to supernovae near the Milky Way and describe the "data challenges" used to ensure the readiness of the detector. We will also discuss the coordination of IceCube alerts with other neutrino detectors in SNEWS.

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Overview

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Intro to fire drill overall strategy

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Brainstorming - Detector response

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Discussion