

Studies of systematic uncertainty effects on IceCube's real-time angular uncertainty

Cristina Lagunas Gualda*, Yosuke Ashida, Ankur Sharma and Hamish Thomas
for the IceCube Collaboration

* Presenter

- **What is this contribution about?**

It is a study of the impact of systematic uncertainties on the angular error reconstruction of IceCube's realtime alerts.

- **Why is it relevant / interesting?**

IceCube's realtime alerts are neutrino events with a high probability of being astrophysical in origin. Improved understanding of the systematic uncertainties in our angular errors can significantly effect/increase the probability of finding multi-wavelength counterparts for these neutrinos.

- **What have we done?**

We simulate different categories of muons that represent the majority of IceCube's realtime alerts and reconstruct them with the method used in the realtime program to calibrate the resulting likelihood map. The error contours derived from it then account for systematic uncertainties. We also verify the correction values currently used for every alert and compare them to the new dedicated re-simulations.

- **What is the result?**

The current correction values used in realtime do not properly account for systematic error variations in different parts of the detector, so we need to establish an array of correction values to choose from for each individual alert. These correction values will be implemented soon in the realtime program and more reconstruction methods will be compared.