Effects of firn ice models on radio neutrino simulations using a RadioPropa ray tracer

Bob Oeyen, Ilse Plaisier, Anna Nelles, Christian Glaser & Tobias Winchen

GHENT UNIVERSITY

DESY.

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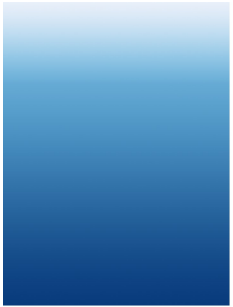
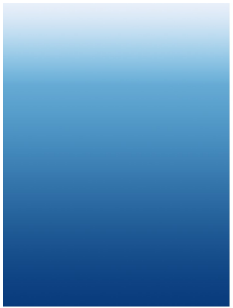
Radio Neutrino Observatory - Greenland

Glacier ice

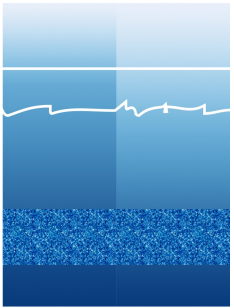


Single exponential → analytically solvable

Glacier ice can be very complex in reality

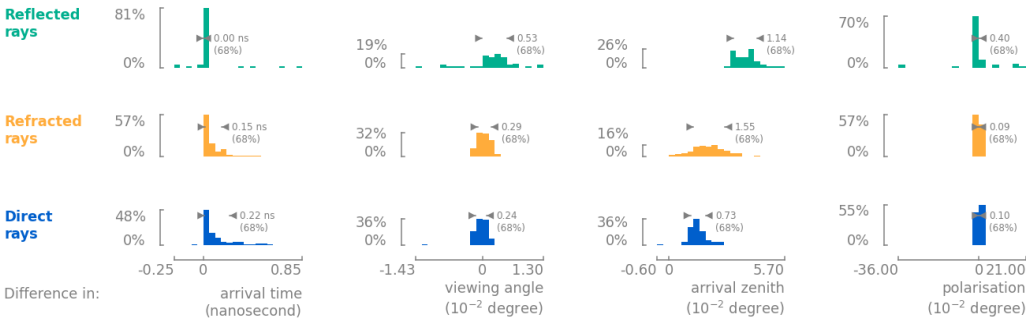


Single exponential

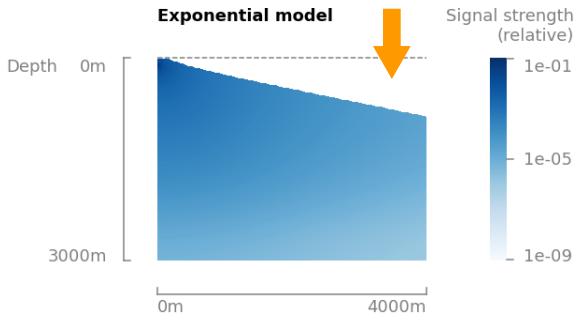


Complex ice features

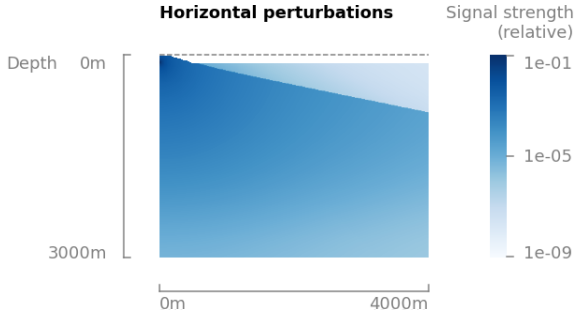
The RadioPropa ray tracer finds accurate solutions:



The shadow zone

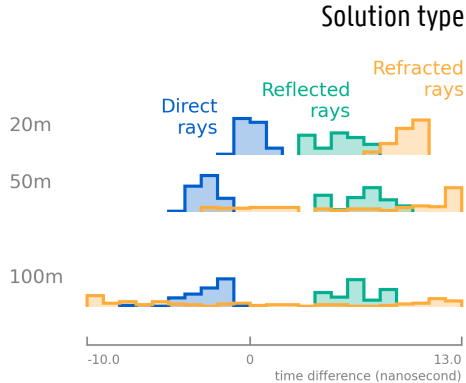


The shadow zone is reduced by horizontal wave modes

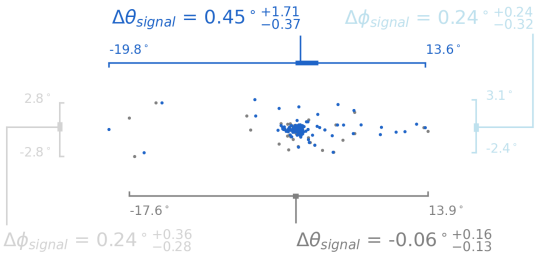


The firn model causes time shifts depending on:

Depth of detection

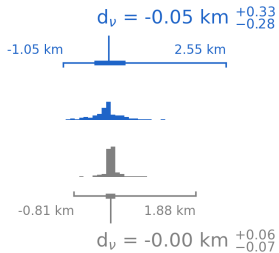


Reconstructions of firn simulations experience systematic uncertainties



Firn

Exponential



Bob Oeyen

PhD student Physics & Astronomy
Experimental Particle Physics — Ghent University

Bob.Oeyen@UGent.be

GHENT UNIVERSITY

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