



Neutrino direction and flavor reconstruction using deep neural networks

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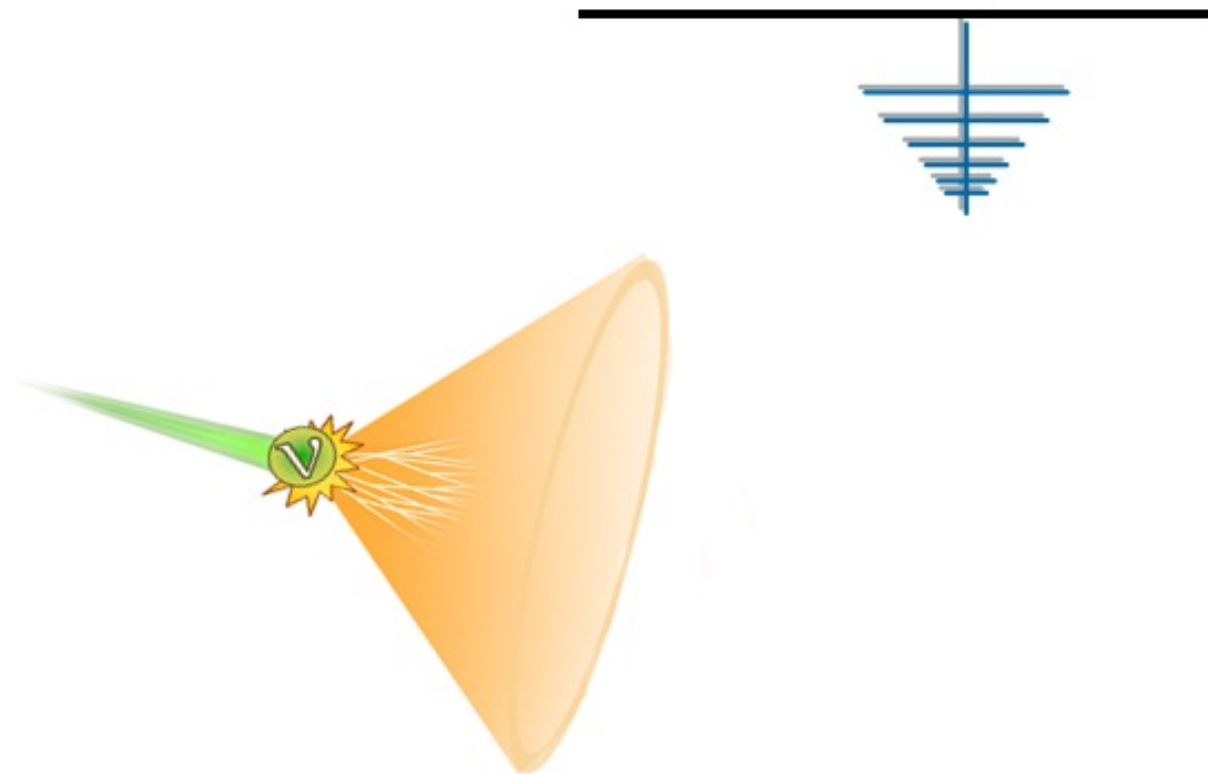
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ICRC 2021

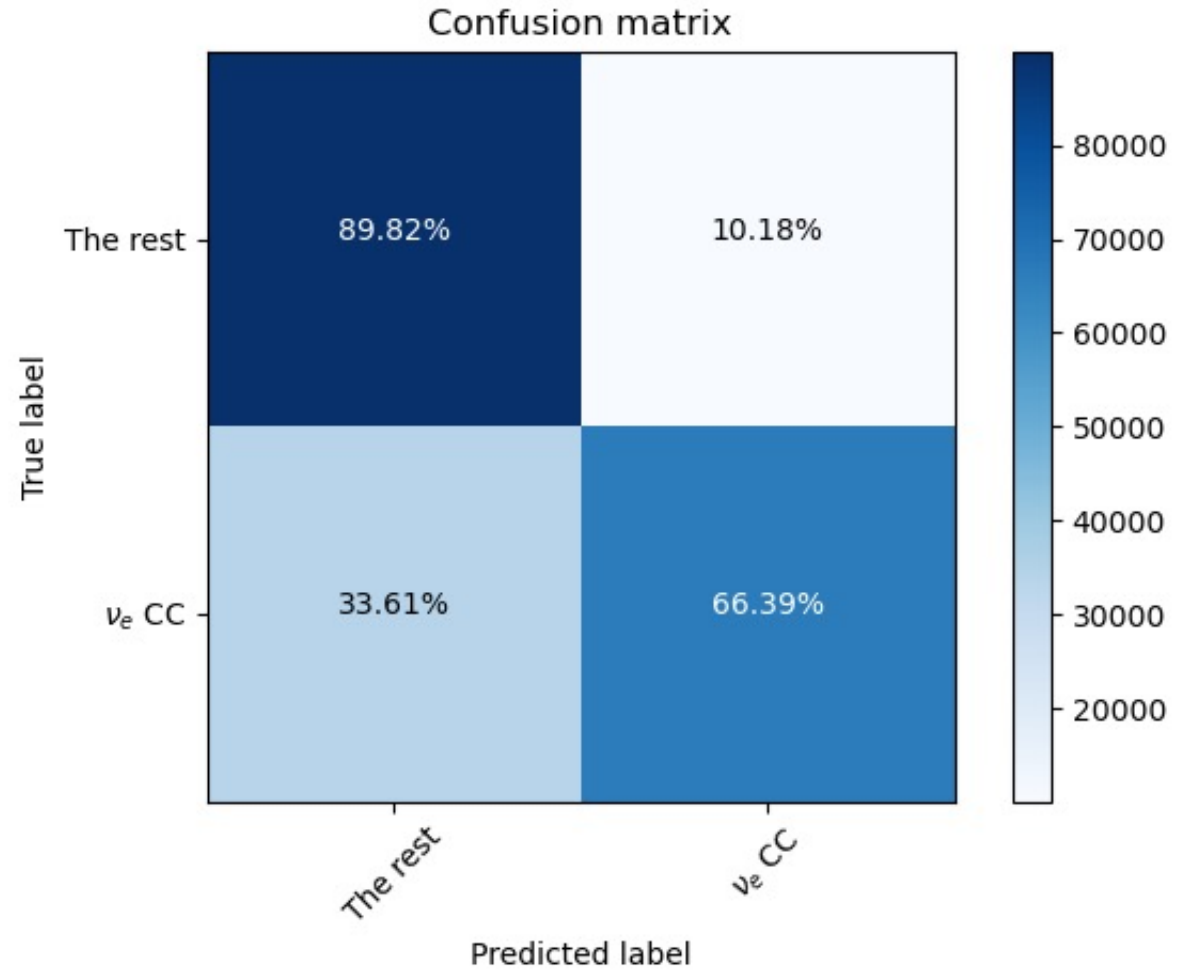
Background

- Neutrino interaction with matter → Radio pulse (Askaryan emission)
- Radio technique for ultra high energy neutrino astronomy has shown great promise...
- Need reconstruction methods
- Great potential use case for neural networks!



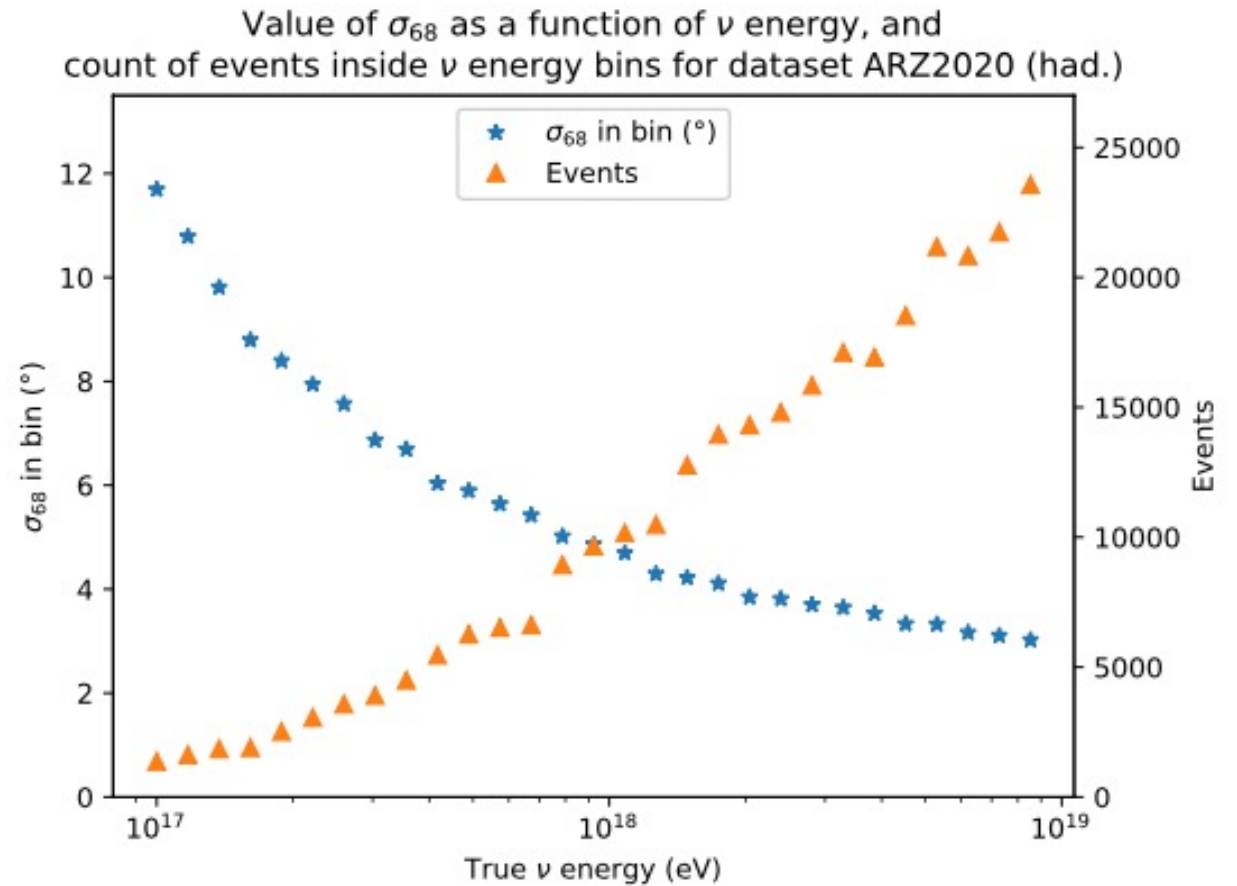
Flavor reconstruction

- Simulated signals from neutrinos with energies $10^{17} < E_\nu < 10^{19}$
- Tell ν_e -CC interactions from the rest.
- ~90% accuracy on non- ν_e -CC events, ~66% accuracy on ν_e -CC events.



Direction reconstruction

- Results: 68 % interval
 - 4° space angle error
- Low energy events more difficult to reconstruct.



Questions?

See the poster

... or the proceeding

... or ask us!

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