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Deep learning reconstruction of the neutrino energy with a shallow Askaryan detector

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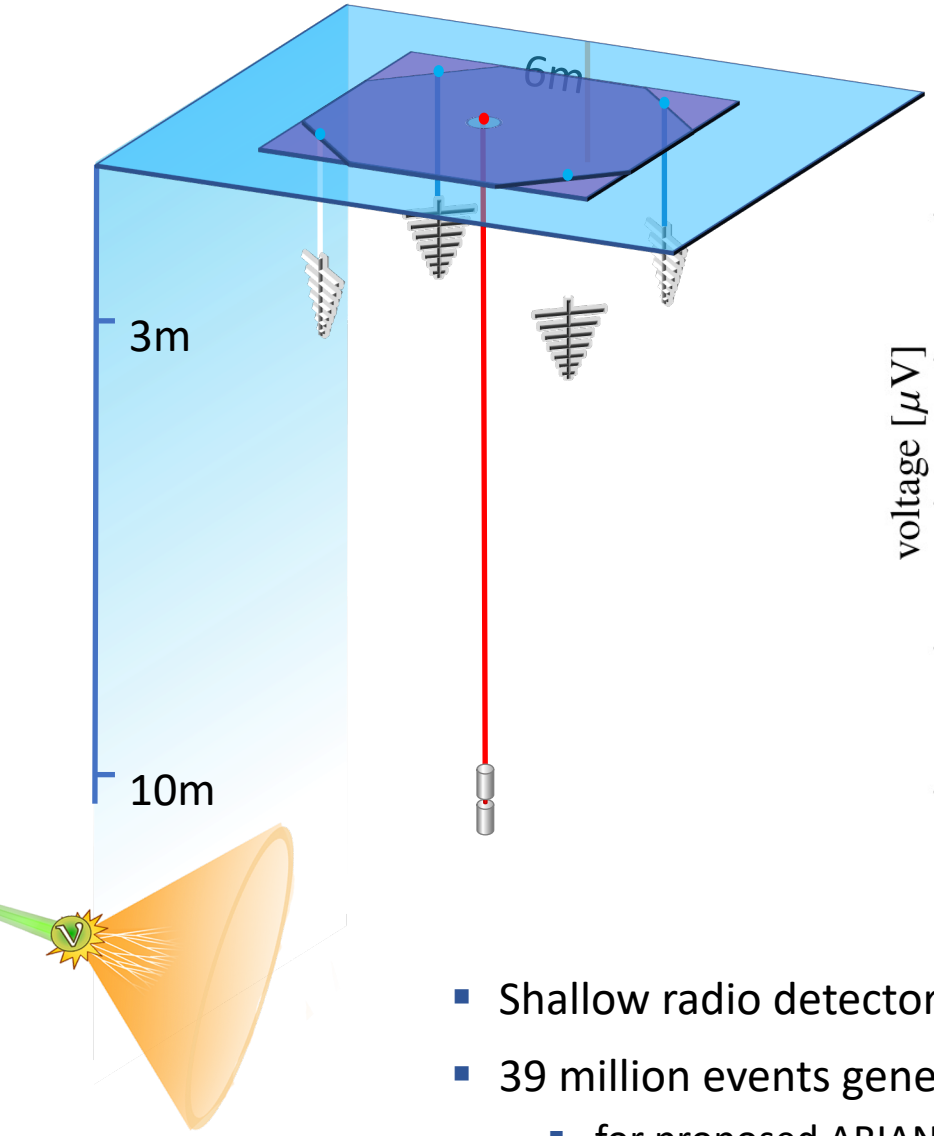
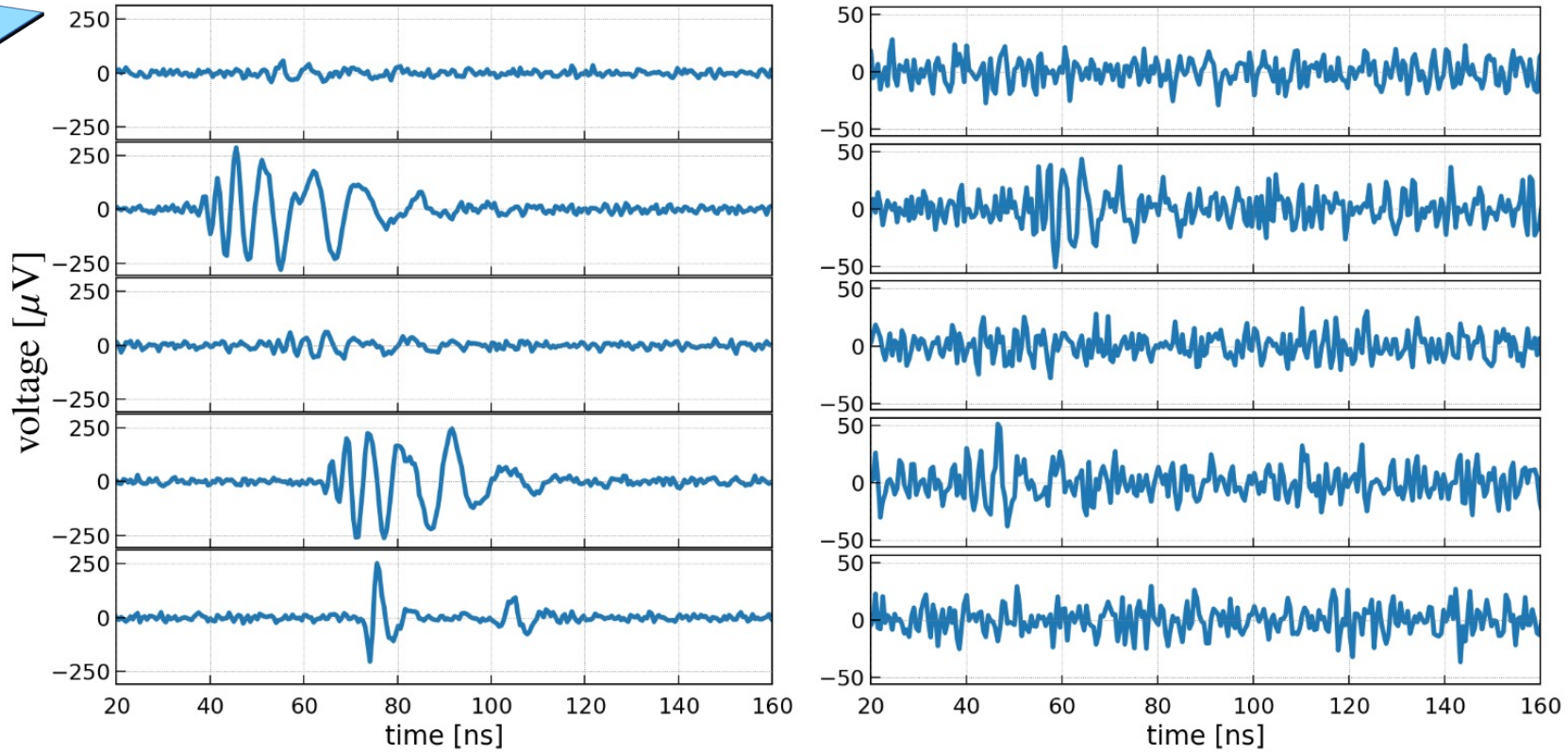
Data set





- Shallow radio detector (ARIANNA, RNO-G, IceCube-Gen2)
- 39 million events generated with NuRadioMC
  - for proposed ARIANNA-200 at Ross Ice Shelf
  - so far only hadronic showers

Christian Glaser

Energy Resolution

- Deep convolutional neural network with 39 million free parameters
- Predicts shower energy based on raw waveforms
- Energy resolution: 80%
  - better than irreducible uncertainty from unknown inelasticity
- Further improvement with more training data expected