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# SIS / DIS Workshop

NuSTEC Board Meeting  
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# SIS / DIS Workshop

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- ◆ Directly before NuInt18: 11 – 13 October 2018.
- ◆ Same location as NuInt18: GSSI - L'Aquila
- ◆ Theory – what do we know about the neutrino nucleus (mainly) SIS and DIS kinematic regions
- ◆ Experiment – what experimental results do we have for neutrino nucleus scattering in the SIS and DIS regions.

# SIS (above the $\Delta$ ) to DIS – Theory/Models

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- ◆ Rein – Sehgal  $\nu$ -N model for single pion production up to 2 GeV or so
- ◆ What's out there for  $n \geq 2$  pion production models up to 2 GeV or so
- ◆ From DIS down in  $W$  and  $Q^2$ 
  - ▼  $1/Q^2$  effects: TMC
  - ▼  $1/Q^2$  effects: higher twist
  - ▼ Duality: Bodek Yang using duality from e-N scattering
  - ▼ Duality: Expressions for duality with  $\nu$ -scattering

# SIS (above the $\Delta$ ) to DIS – Experimental Results

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- ◆ 2 and 3 pion production from  $\nu$ -D ,  $\nu$ -Ne/propane bubble chamber experiments – 100's to 1000's of events.
- ◆ Multi-pion production off  $\text{CF}_3\text{BR}$  in Gargamelle.
- ◆ Current MINERvA study of SIS region off CH

## $\nu$ – Nucleus DIS

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- ◆ nPDFs in  $\nu$  - nucleus scattering the same as nPDFs in  $e/\mu$  – nucleus scattering?
- ◆ x-dependent nuclear effects not the same for  $\nu$  - nucleus scattering as for  $e/\mu$  – nucleus scattering?
- ◆ Recent Jlab results indicate x-dependent nuclear effects NOT only DIS but continue down into the SIS region.