Study of the Ice Anisotropy with Flasher Data of 2015

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National and Kapodistrian
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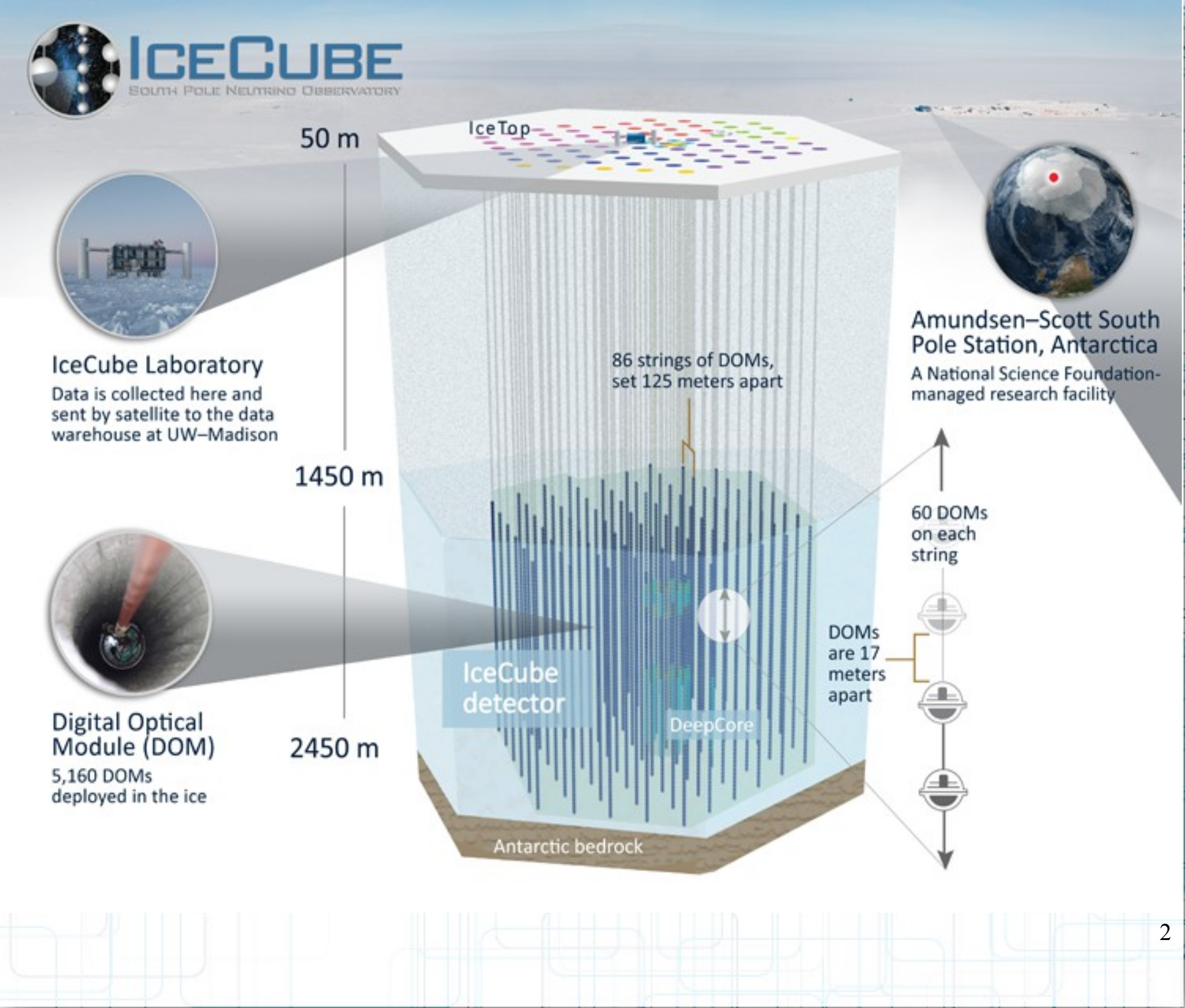
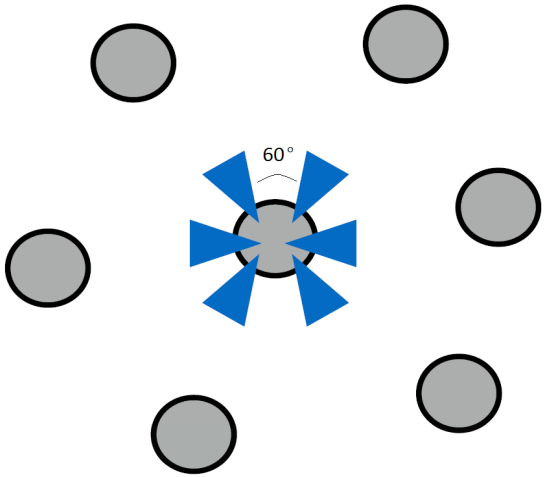
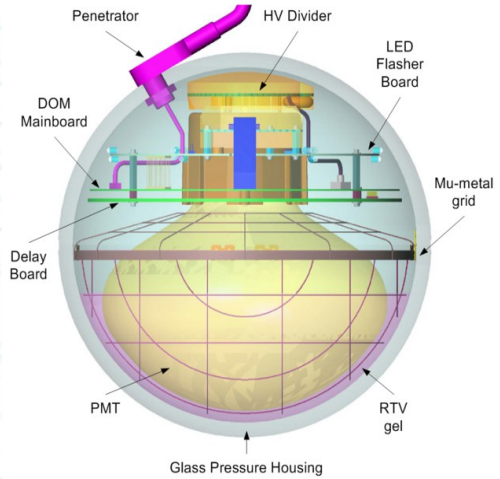
IceCube
SOUTH POLE NEUTRINO OBSERVATORY


IceCube
South Pole Neutrino Observatory
50 m
IceTop
IceCube Laboratory
Data is collected here and sent by satellite to the data warehouse at UW–Madison
1450 m
86 strings of DOMs, set 125 meters apart
Amundsen–Scott South Pole Station, Antarctica
A National Science Foundation-managed research facility
60 DOMs on each string
DOMs are 17 meters apart
IceCube detector
DeepCore
Digital Optical Module (DOM)
5,160 DOMs deployed in the ice
2450 m
Antarctic bedrock

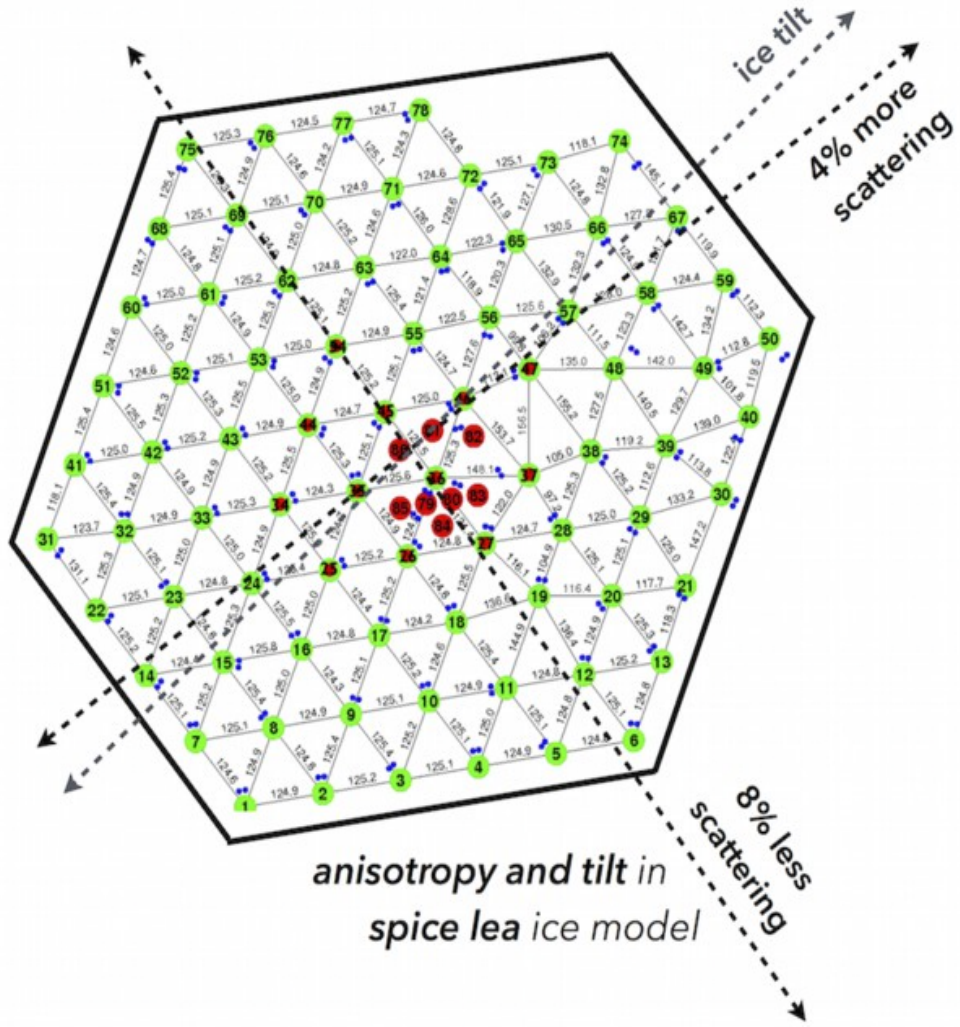
Anisotropy Flasher Set



Flasher : 12 LEDs
6 horizontal & 6 tilted (40°)



Ice model: SPICE Lea

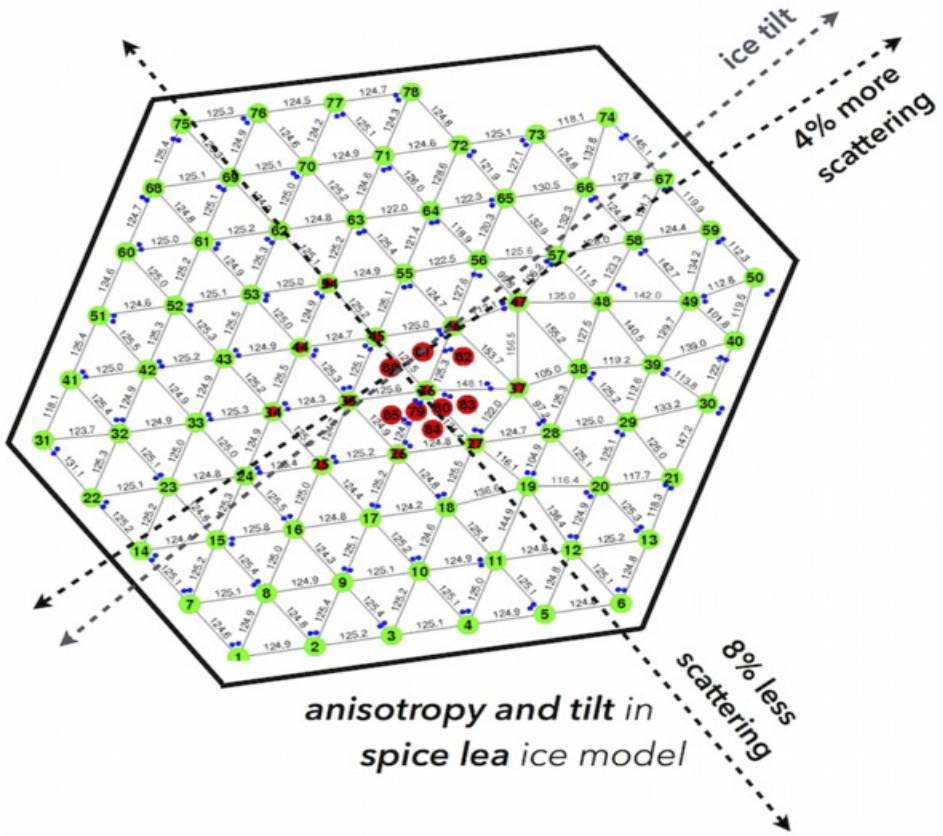


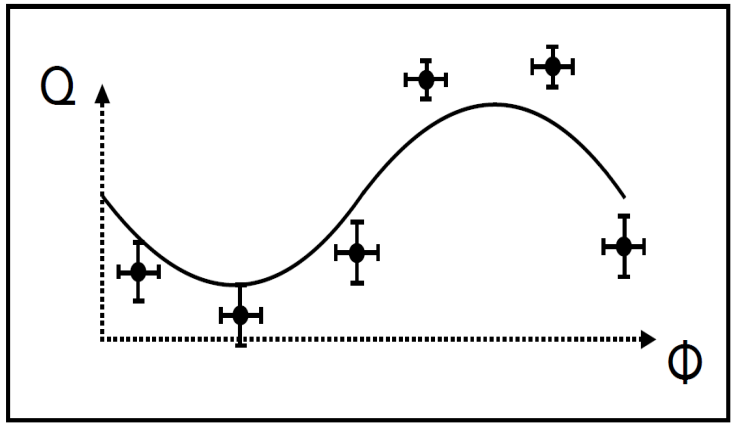
Problems and Goals

- In some cases IceCube misreconstructs ν_e events as ν_τ events due to ice anisotropy

- Better understanding of the Antartic ice using specific flasher data

Goals





Study of:

- Distance
- Emission profile
- LED light output uncertainty ~20%


TO BE
CONTINUED!