LBNE Beam Studies

Brett Viren

Physics Department

BROOKHAVEN
NATIONAL LABORATORY

NNN09, 2009/10

Outline

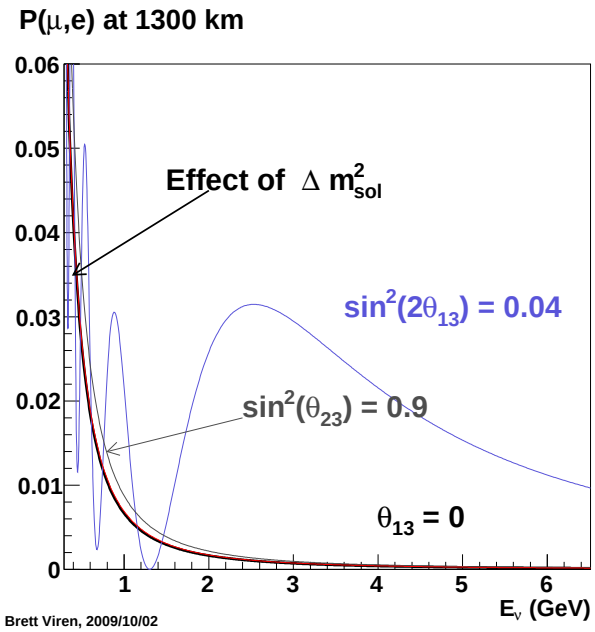
Wide-band ν-beam Concept

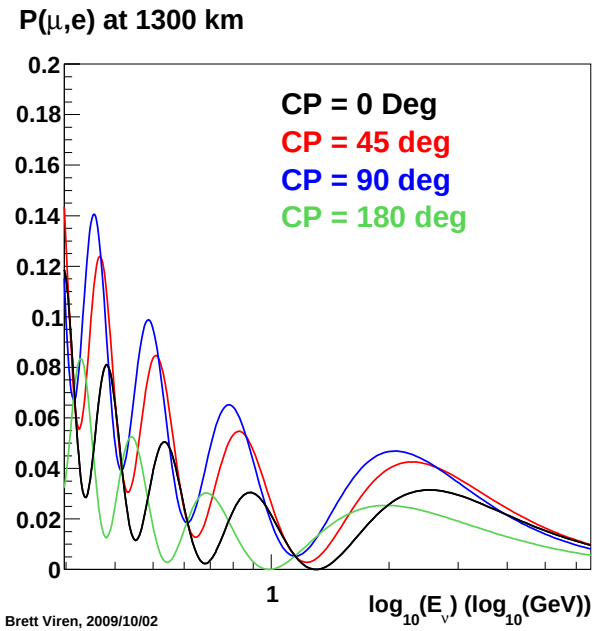
Optimizing the ν beam

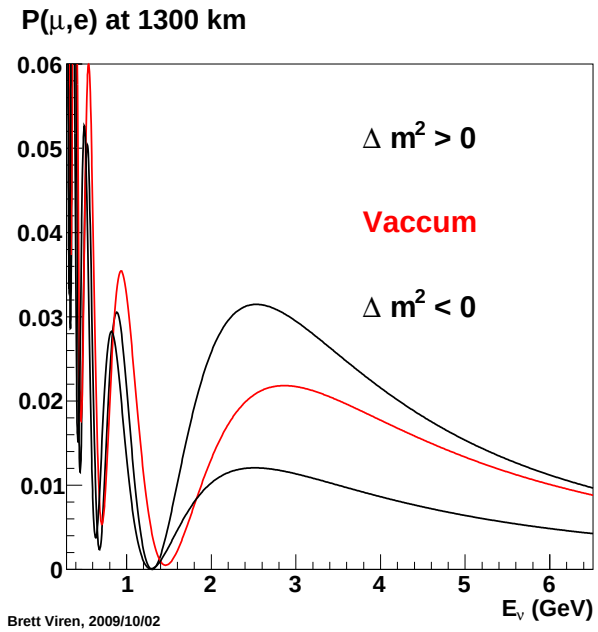
Sensitivities

Reminder of the concept

- Potential degeneracies exist between oscillation parameters.
- Parameters assert themselves differently at different energies.
- $\Rightarrow$ Must cover multiple peaks to disambiguate!

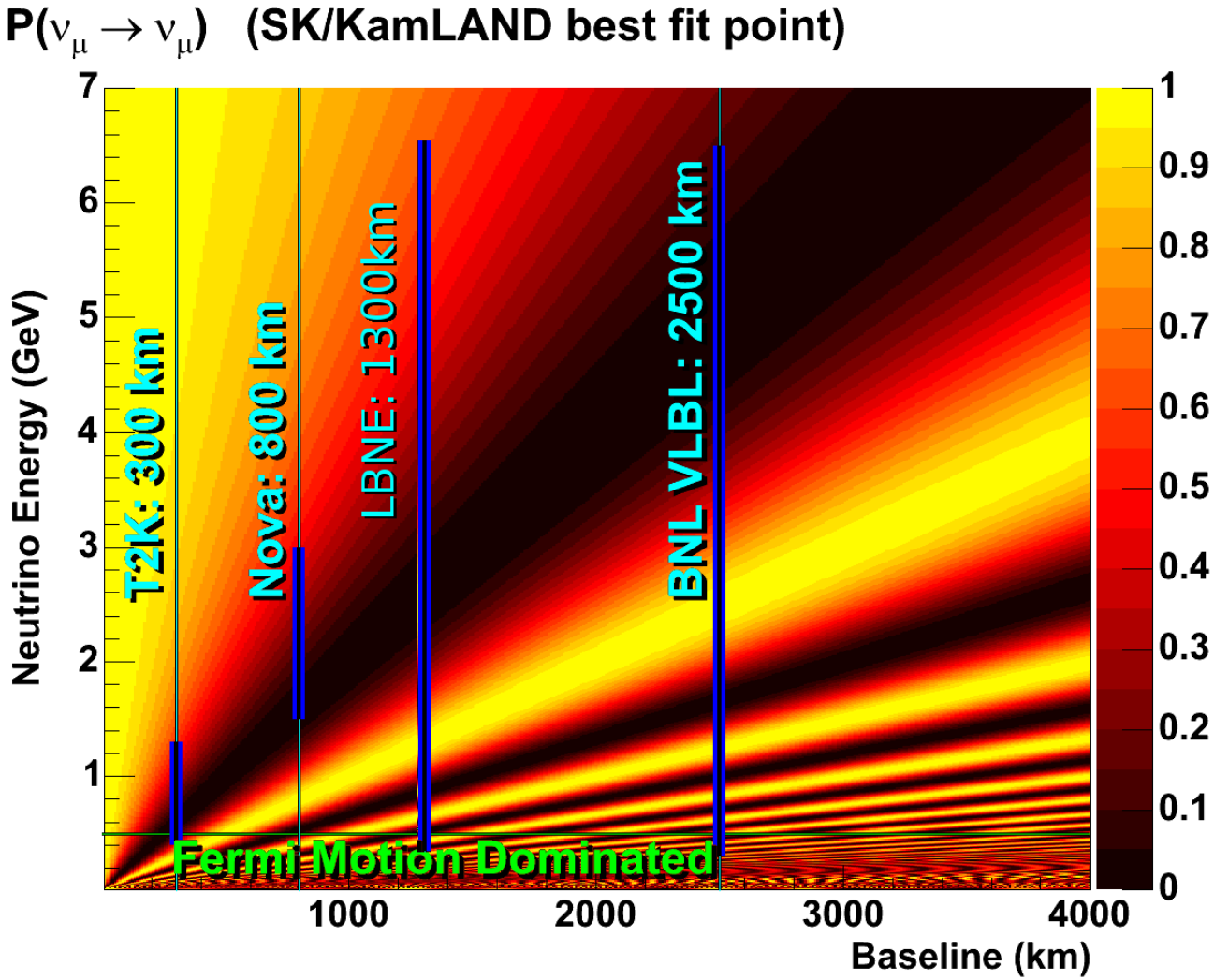






Energy:	low	med	high
$\sin^2 2\theta_{13}$	$\surd$	$\surd$	$\surd$
$sign(\Delta m^2_{32})$	-	-	$\surd\surd\surd$
δ_{CP}	$\surd$	$\surd\surd$	$\surd$
solar	$\surd\surd\surd$	$\surd$	-

Beam and Baseline Requirements



- Wide band beam needed to cover features.
- Long baseline to draw features away from Fermi motion dominated energy regime.

Optimizing the ν beam

Sensitivities

Thanks.