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Neutrino Oscillation Probabilities in Matter

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Recent advances in ways to calculate the neutrino oscillation probabilities in matter will be present as well as their utility for long baseline oscillation experiments. These methods are not only numerically accurate enough for all current and future experiments but provide better analytic understanding then other methods. How accurate an oscillation probability is needed for long baseline experiments will also be discussed as well as the significance of variations in the matter density along the neutrino path line.

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