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Analytic Neutrino Oscillation Probabilities in Matter Revisited.

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As we enter the precision measurement era for neutrino oscillation physics, it is imperative that our understanding of three flavor neutrino oscillations is also at comparable precision. Even in vacuum, three flavor oscillations is highly none trivial at a precision of 5% or better. Matter effects further complicate three flavor oscillation physics. Here, I will revisit the analytic description of three flavor neutrino oscillation physics as given in recent papers, and discuss their implications for the current generation of neutrino oscillation experiments, in particular T2K and NOvA, and follow up with the next generation of experiments DUNE, T2HKK, and JUNO.

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