T2K Run 1-4 ν_μ Disappearance Data Release

`T2K-numuDisappearanceData-Run1to4-2014.root` contains the following ROOT objects:

`t2krun1to4_normal_2D_n2dlnLsurface` TH2D containing the $-2\Delta \ln L$ surface as a function of $\sin^2 \theta_{23}$ and Δm_{32}^2. Assumes Normal hierarchy

`t2krun1to4_normal_2D_FC_68CLcontour` TGraph of the Feldman-Cousins 68% CL contour as a function of $\sin^2 \theta_{23}$ and Δm_{32}^2. Normal hierarchy

`t2krun1to4_normal_2D_FC_90CLcontour` TGraph of the Feldman-Cousins 90% CL contour as a function of $\sin^2 \theta_{23}$ and Δm_{32}^2. Normal hierarchy

`t2krun1to4_normal_2D_bestfit` TMarker of the best fit value of $\sin^2 \theta_{23}$ and Δm_{32}^2. Normal hierarchy

`t2krun1to4_inverted_2D_n2dlnLsurface` TH2D containing the $-2\Delta \ln L$ surface as a function of $\sin^2 \theta_{23}$ and Δm_{13}^2. Inverted hierarchy

`t2krun1to4_inverted_2D_FC_68CLcontour` TGraph of the Feldman-Cousins 68% CL contour as a function of $\sin^2 \theta_{23}$ and Δm_{13}^2. Inverted hierarchy

`t2krun1to4_inverted_2D_FC_90CLcontour` TGraph of the Feldman-Cousins 90% CL contour as a function of $\sin^2 \theta_{23}$ and Δm_{13}^2. Inverted hierarchy

`t2krun1to4_inverted_2D_bestfit` TMarker of the best fit value of $\sin^2 \theta_{23}$ and Δm_{13}^2. Inverted hierarchy

`t2krun1to4_normal_1D_s23sq_profiled_n2dlnL` TGraph of profiled $-2\Delta \ln L$ vs. $\sin^2 \theta_{23}$. Normal hierarchy

`t2krun1to4_normal_1D_dm32sq_profiled_n2dlnL` TGraph of profiled $-2\Delta \ln L$ vs. Δm_{32}^2. Normal hierarchy

`t2krun1to4_inverted_1D_s23sq_profiled_n2dlnL` TGraph of profiled $-2\Delta \ln L$ vs. $\sin^2 \theta_{23}$. Inverted hierarchy

`t2krun1to4_inverted_1D_dm32sq_profiled_n2dlnL` TGraph of profiled $-2\Delta \ln L$ vs. Δm_{13}^2. Inverted hierarchy
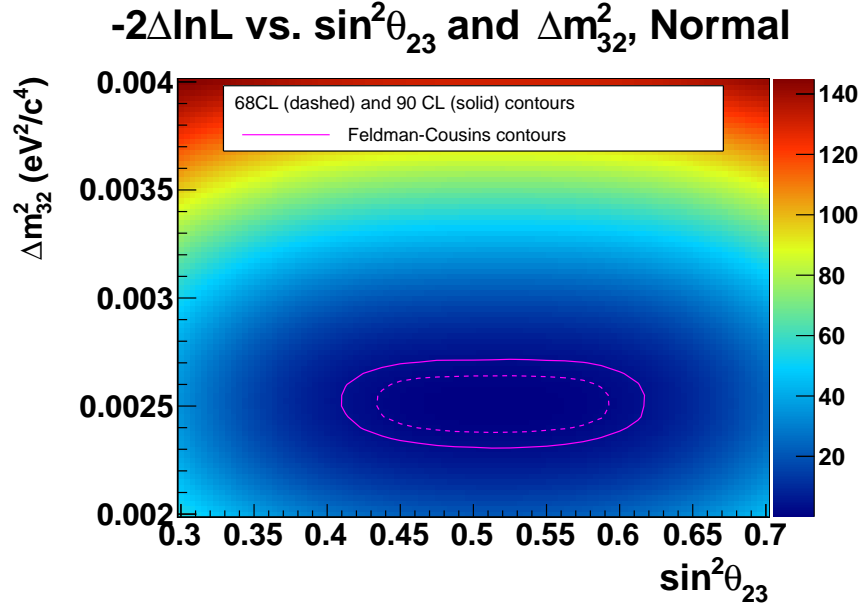

Figure 1: $-2\Delta \ln L$ surface and contours for the normal hierarchy

The file `T2K-numuDisappearanceData-Run1to4-2014.txt` contains the information above as text tables.
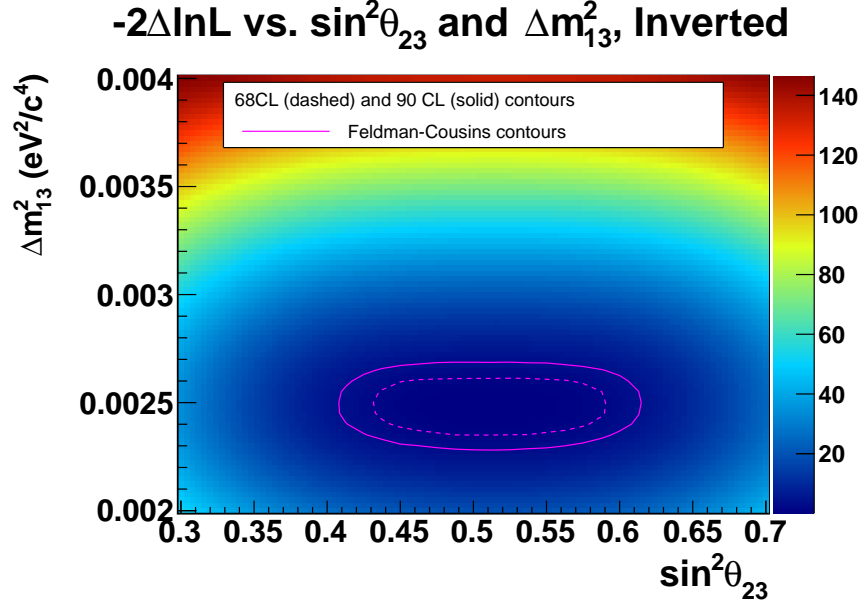
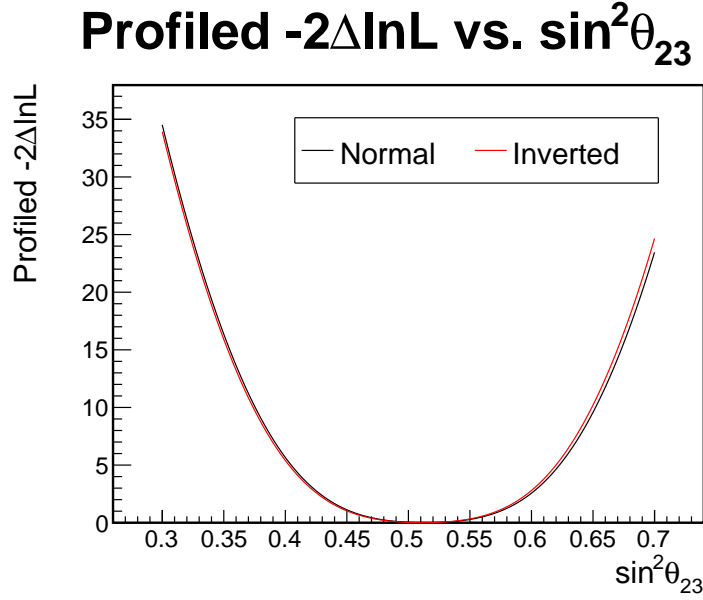Figure 2: $-2\Delta \ln L$ surface and contours for the inverted hierarchy

Figure 3: profiled $-2\Delta \ln L$ versus $\sin^2 \theta_{23}$ for the normal (black) and inverted (red) hierarchy
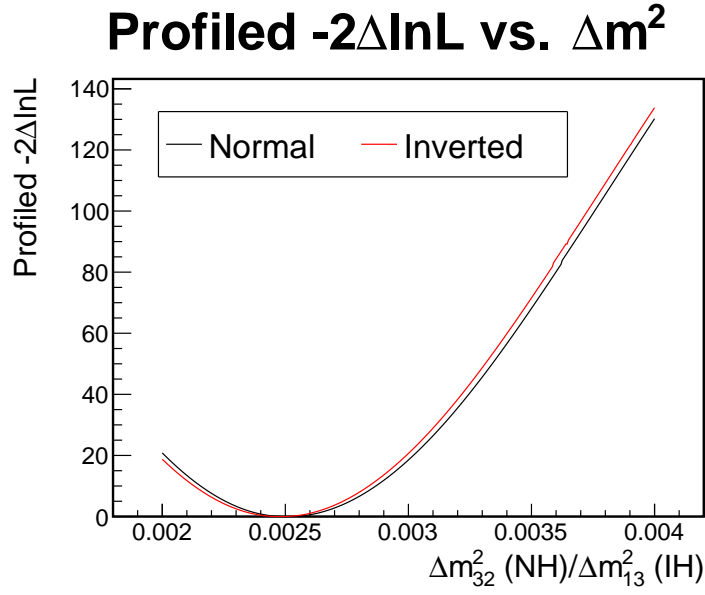
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Profiled -2ΔlnL vs. Δm²

Profiled -2ΔlnL

140

120 — Normal — Inverted

100

80

60

40

20

0

0.002 0.0025 0.003 0.0035 0.004

Δm^2_{32} (NH)/Δm^2_{13} (IH)

Figure 4: profiled $-2\Delta \ln L$ versus Δm^2_{32} (Δm^2_{13}) for the normal (inverted) hierarchy shown in black (red)