Confidence regions for reactor neutrino oscillation parameters $\theta_{13}$and Δm^2_{31} from Double Chooz Far and Near data

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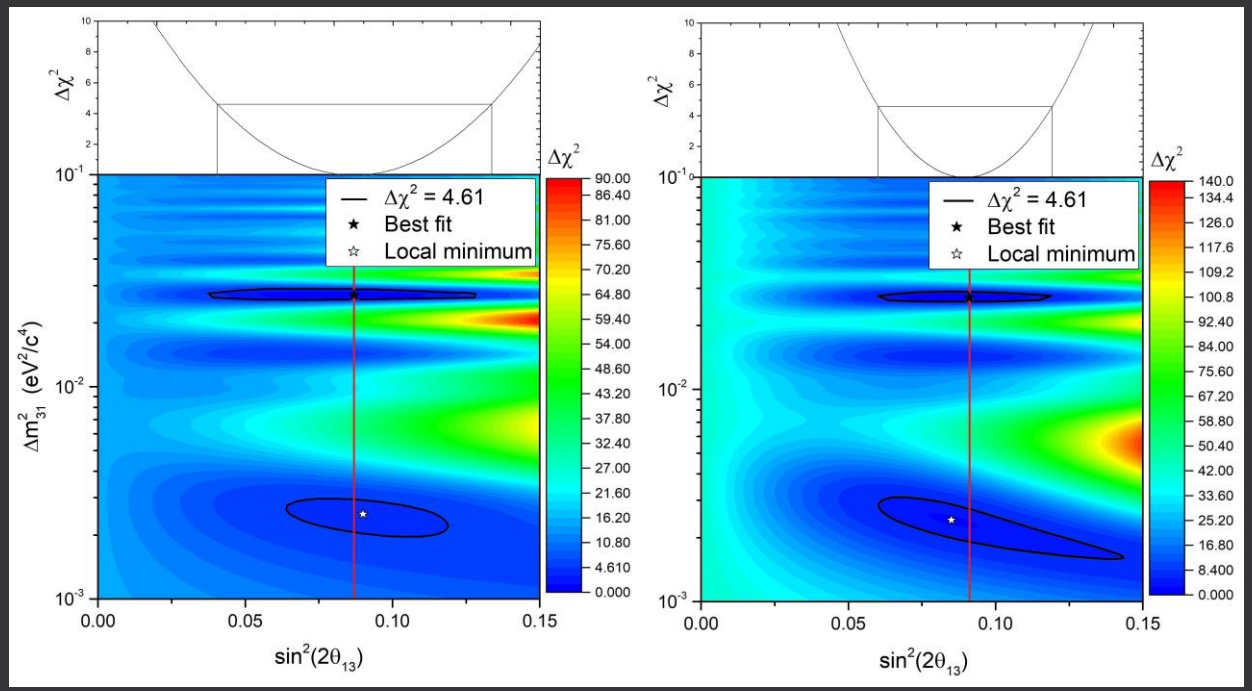
Two oscillation parameters analysis with only Far data



$$\chi^2_{R+S} = \sum_{i=1}^{40}\sum_{j=1}^{40}\left(N_i^{\text{obs}} - N_i^{\text{exp}}\right) M_{ij}^{-1}\left(N_j^{\text{obs}} - N_j^{\text{exp}}\right)$$

$$+\chi^2_{\delta E}(\epsilon_a, \epsilon_b, \epsilon_c) + \sum_{k=1}^{5}\frac{\epsilon_k^2}{\sigma_k^2} + \chi^2_{\text{off}}.$$

	FCM ☆	FCM ★	DCM ☆	DCM ★
χ^2_{R+S}/D.O.F.	37.17/39	41.83/39	40.07/39	43.34/39
$\sin^2(2\theta_{13})$	$0.087^{+0.047}_{-0.046}$	0.090	$0.091^{+0.033}_{-0.029}$	0.085
Δm^2_{31}	$27.043^{+1.536}_{-1.217}$	2.512	$27.043^{+1.456}_{-25.34}$	2.422

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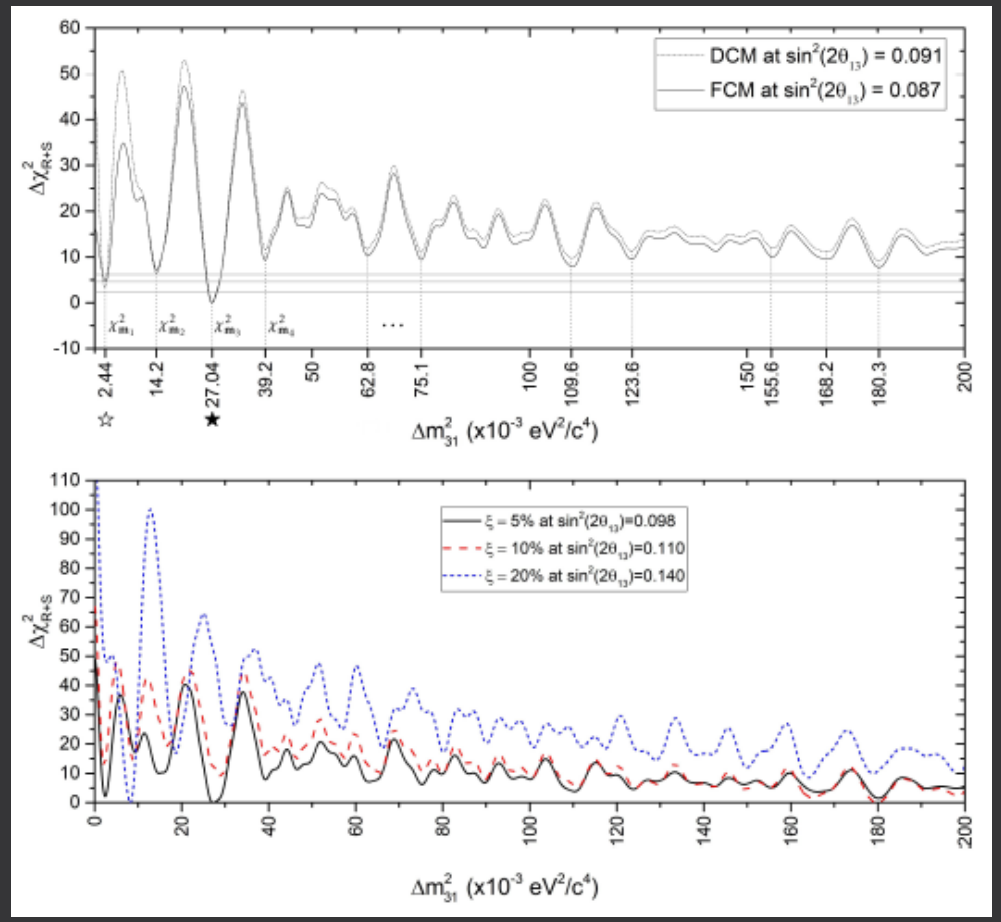
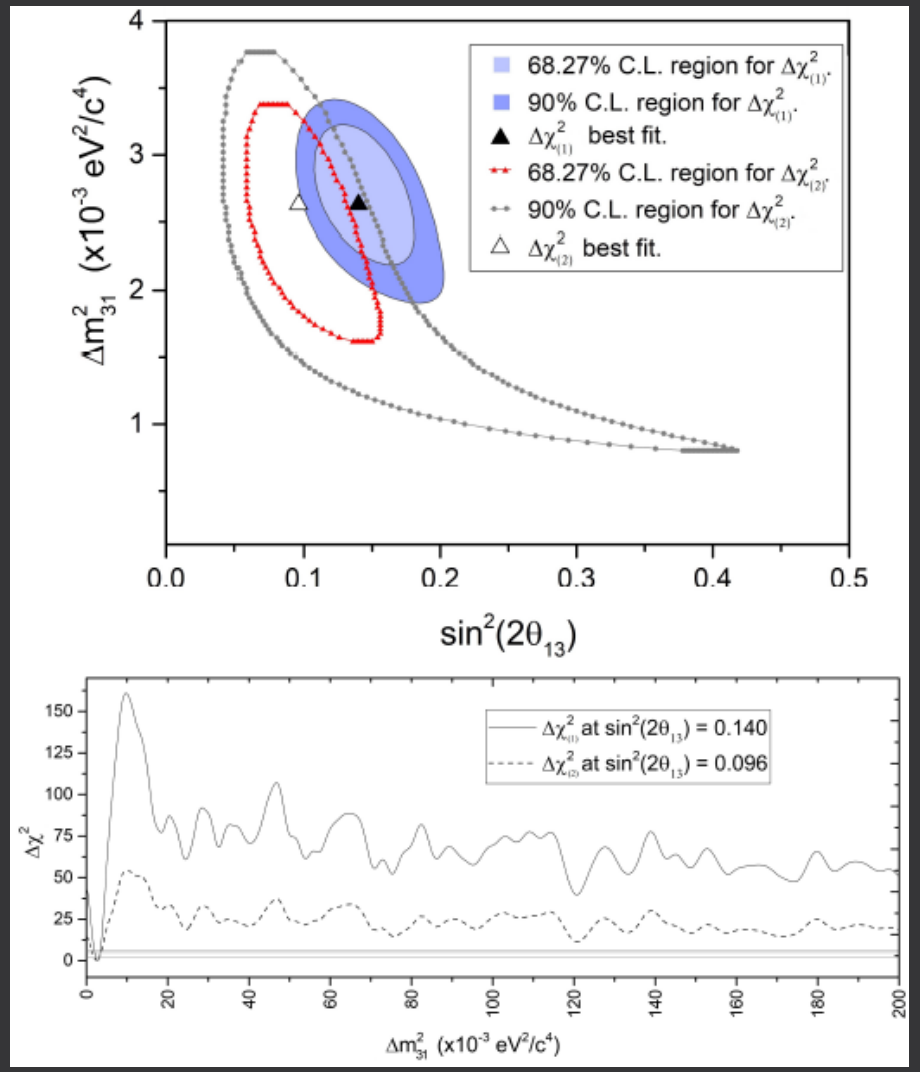
The Spectral bump



Far + Near Analysis



Absolute	χ^2/D.O.F.	53.4/40	42.1/40
minimum	$\sin^2(2\theta_{13})$	$0.140^{+0.047}_{-0.043}$	0.095 ± 0.053
	Δm^2_{31}	$2.63^{+0.33}_{-0.55}$	$2.63^{+0.98}_{-1.15}$