

# LOWER LIMITS ON THE LIFETIME OF MASSIVE NEUTRINO RADIATIVE DECAY FROM THE 2006 TOTAL SOLAR ECLIPSE



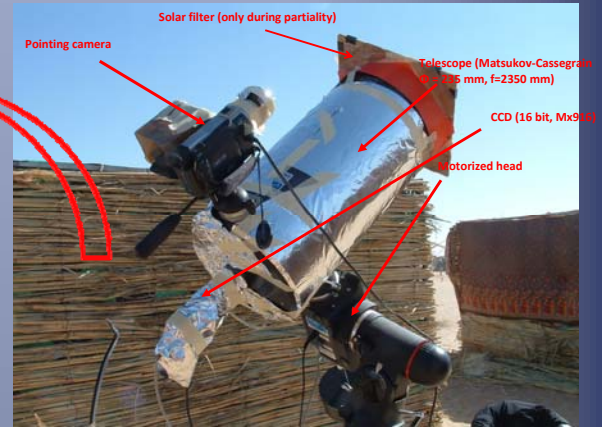
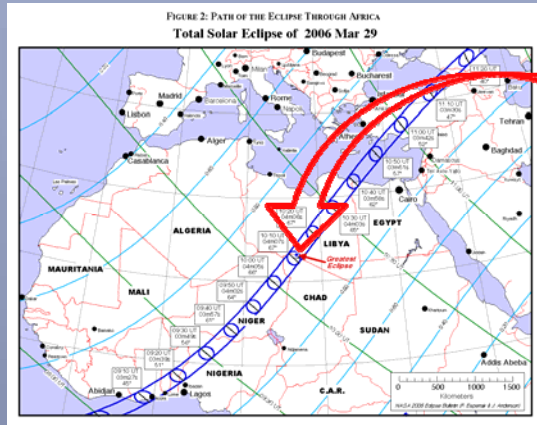
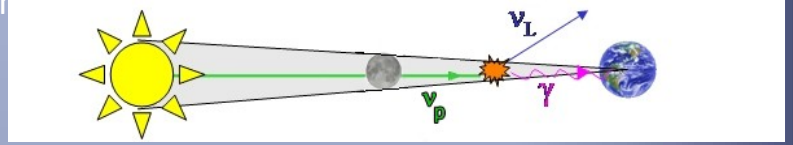
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Vlad Popa, for the NOTTE Collaboration  
Institute for Space Sciences, Bucharest - Magurele



The basic idea: look for possible solar neutrino radiative decays during TSO's:

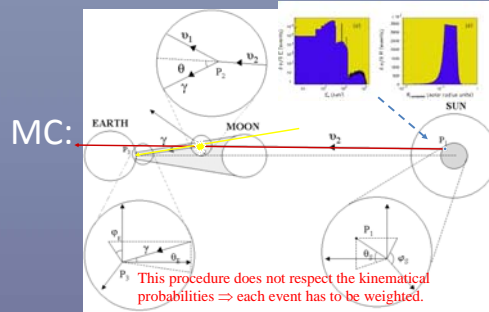
$$\nu_2 \rightarrow \nu_1 + \gamma$$



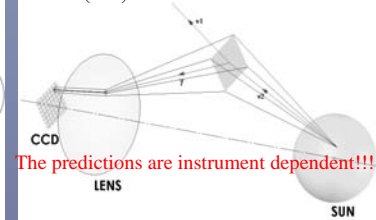
The experiment:



Data:

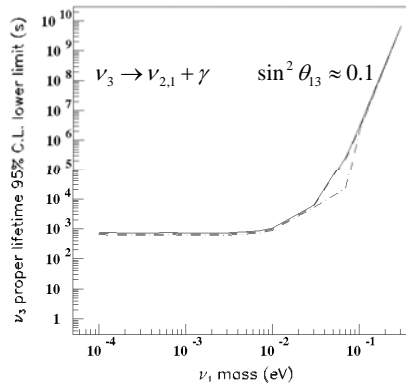
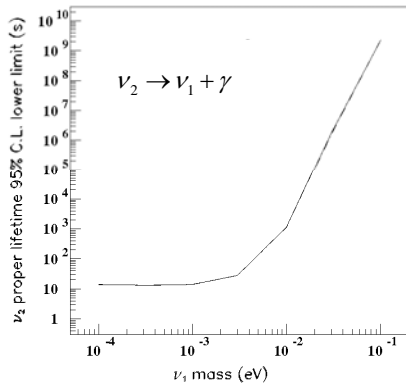


$$\frac{d\Gamma}{d \cos \theta^*} \propto \frac{m_2}{(\Delta m^2)^3} (m_1^2 + m_2^2 + m_1 m_2) (1 + \alpha \cos \theta^*)$$



↓  
Wavelet analysis: 5<sup>th</sup> order, optimal for the 16'' scale. (MC)

$$3\sigma_{N\tau^5} = P\Phi_\nu \sin^2 \theta_{21} \times S_M t_{obs} \left( 1 - e^{-\frac{t_{ME}}{\tau}} \right) e^{-\frac{t_{SM}}{\tau}}$$



Calculations for the inverse hierarchy scenario are ongoing. Further details: S. Cecchini *et al.*, arXiv:0912.5086 [hep-ex]

The experiment was founded by the Bologna University and INFN, the analysis partially under CNCSIS Contract 539/2009. We thank the Italian Institute of Culture of Tripoli, the Winzrik Group and the Libyan Air Force.

