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## **Damping of neutrino oscillations and decoherence in neutrino reactor and radioactive source experiments**

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Recently, there has been an increased interest in studying the manifestations of the wave packet (WP) nature of neutrinos in neutrino oscillations experiments. In particular, a number of papers the possibilities of probing quantum decoherence due to separation of neutrino WPs and the corresponding damping of neutrino oscillations in reactor and neutrino source experiments were discussed. It has been also argued that such decoherence effects may reconcile the results of the BEST neutrino source experiment with reactor neutrino data. I will report the results of our recent work (arXiv:2208.03736), in which we studied in detail damping of neutrino oscillations in these two types of experiments. We have demonstrated that the effects of decoherence by WP separation can always be incorporated into a modification of the energy resolution function of the detector and so are intimately entangled with it. We also estimated, for the first time, the lengths of WPs of reactor neutrinos and of neutrinos from  $^{51}\text{Cr}$  source. Our conclusion is that the effects of finite neutrino WP lengths are many orders of magnitude below the current experimental sensitivities and so they cannot be probed in reactor and source experiments.

### **Submitted on behalf of a Collaboration?**

No

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