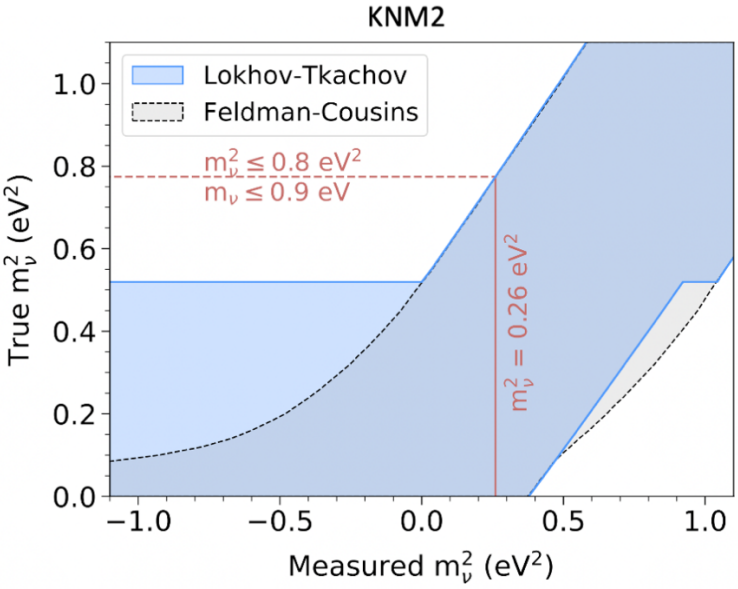
The Lokhov-Tkachov belt construction

With statistical fluctuations, KATRIN may observe a negative best-fit value for m_ν^2. In such cases, the Feldman-Cousins construction of confidence belts may provide a more stringent upper limit under more negative fitted m_ν^2 values. In contrast, if the measured m_ν^2 is negative, the Lokhov-Tkachov construction gives an upper limit equal to that of a measured $m_\nu^2 = 0\ \mathrm{eV}^2$. This serves as a more conservative construction method against unknown systematics. The KNM2 belt construction is shown below for illustration.



Reference:

A. V. Lokhov, F. V. Tkachov, *Phys. Part. Nucl.* 46, 347 (2015).