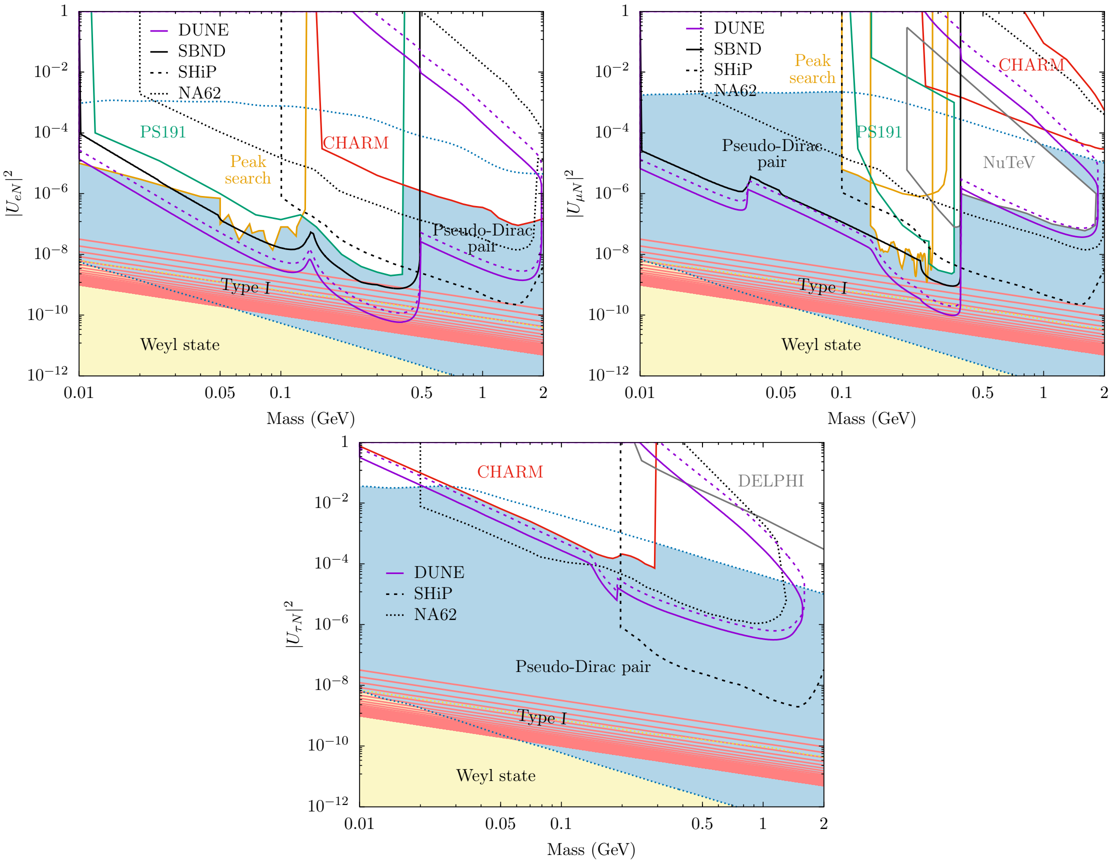

Fig. 8. The 90 % C.L. sensitivity regions for dominant mixings $|U_{eN}|^2$ (top left), $|U_{\mu N}|^2$ (top right), and $|U_{\tau N}|^2$ (bottom) are presented combining results for channels with good detection prospects. The study is performed for Majorana neutrinos (solid line) and Dirac neutrinos (dashed lines), and it is compared to existing results, PS191 [30, 31] (green), peak searches [20, 22, 23] (yellow), CHARM [34] (red), NuTeV [35] (gray), and DELPHI [32] (gray), and to predictions of future experiments, SBN [41] (black solid line), NA62 [72] (black dotted line), and SHiP [77] (black dahsed line). The shaded areas corresponds to possible neutrino mass models considered in this article: the blue area is the result of the simulations of the ISS (2,2) and ISS (2,3) models where the lightest pseudo-dirac pair is the neutrino decaying in the ND; the yellow area corresponds to the ISS (2,3) scenario when the single Weyl state is responsible for a signal; the red band corresponds to a type I seesaw scenario with a neutrino mass starting from 50 meV.

$N \to \nu ee$, $\nu e\mu$, $\nu\mu\mu$, $\nu\pi^0$, $e\pi$, $\mu\pi$ and are preferred because of their good discovery prospect, for which background has been also studied. They all give strong sensitivities, especially for masses below 500 MeV. Their goodness is due to high branching ratios and also to clean and well-defined signatures in the detector, allowing the background to be controlled with sufficient precision. The neutrino spectrum component coming from the strange D meson allows for weaker sensitivity to masses above the neutral kaon mass. We conducted the sensitivity study for both the scenarios of Majorana and Dirac neutrinos.

To appreciate the ND performance, we make a comparison with results of previous experiments, in particular PS191 [30, 31], peak searches [20, 22, 23], CHARM [34], NuTeV [35], and DELPHI [32]. We find that the DUNE ND can increase the bound on the electronic