

FIG. 1. Constraints on $|U_{eN}|^2$ as a function of the HNL mass m_N . Limits shown: ^{20}F β -decay [1], ATLAS (2019) [2], ATLAS (2022) [3], ATLAS (2024) [4], BEBC(Barouki et al) [5], Belle [6], Borexino [7], CHARM [8], CMS (2018) [9], CMS (2022) [10], CMS (2024-I) [11], CMS (2024-II) [12], Cosmology [13], DELPHI (long) [14], DELPHI (short) [14], KENU (Bryman-Shrock) [15], L3 (2001) [16], LSND (Ema et al) [17], NA62 [18], PIENU (2017) [19], PIENU (Bryman-Shrock) [15], PMNS Unitarity [20], Super-Allowed β decays (Bryman-Shrock) [15], T2K [21], TRIUMF [22].

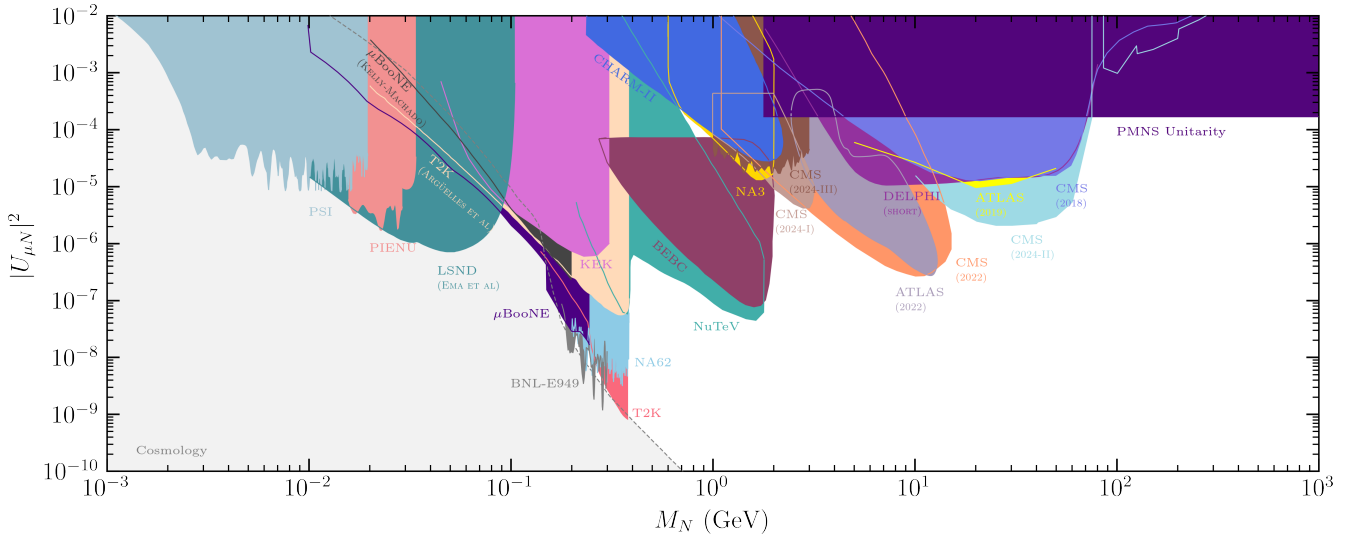


FIG. 2. Constraints on $|U_{\mu N}|^2$ as a function of the HNL mass m_N . Limits shown: μBooNE [?], μBooNE (Kelly-Machado) [23], ATLAS (2019) [2], ATLAS (2022) [3], BEBC [24], BNL-E949 [25], CHARM-II [26], CMS (2018) [9], CMS (2018-dilepton) [27], CMS (2022) [10], CMS (2024-I) [11], CMS (2024-II) [12], CMS (2024-III) [28], CMS (8TeV) [29], Cosmology [13], DELPHI (short) [14], KEK [15], LSND (Ema et al) [17], NA3 [30], NA62 [31], NuTeV [32], PIENU [33], PIENU(low μ energy) [33], PMNS Unitarity [20], PSI [34], T2K [21], T2K (Argüelles et al) [35].

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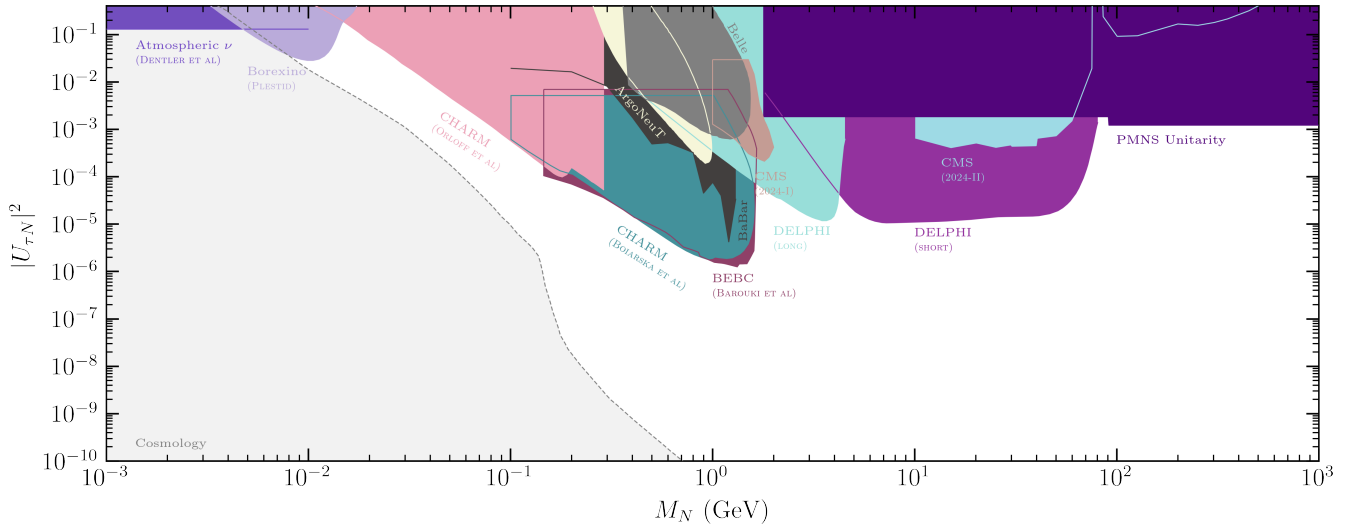


FIG. 3. Constraints on $|U_{\tau N}|^2$ as a function of the HNL mass m_N . Limits shown: ArgoNeuT [36], Atmospheric ν (Dentler et al) [37], BEBC(Barouki et al) [5], BaBar [38], Belle [39], Borexino (Plestid) [40], CHARM (Boiarska et al) [41], CHARM (Orloff et al) [42], CMS (2024-I) [11], CMS (2024-II) [12], Cosmology [13], DELPHI (long) [14], DELPHI (short) [14], PMNS Unitarity [20].

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