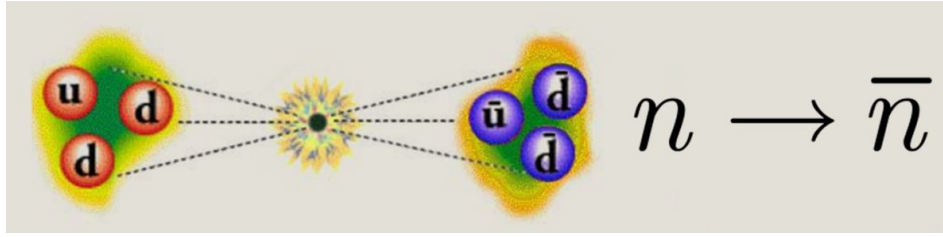


# Theoretical Innovations for Future Experiments Regarding Baryon Number Violation, Part 1



Contribution ID: 35

Type: **Oral Presentation**

## Neutron-antineutron oscillation search at Super-Kamiokande

*Monday, 3 August 2020 12:30 (30 minutes)*

As a baryon number violating process with  $\Delta B = \Delta(B-L) = 2$ , neutron-antineutron oscillation ( $n \rightarrow \bar{n}$ ) provides an important candidate and a unique probe to the baryon asymmetry. We performed a search for  $n \rightarrow \bar{n}$  oscillation with the Super-Kamiokande (SK) experiment. Full exposure data set of SK was analyzed using a multi-variate analysis based on kinematic variables and basic distributions from simulated  $n \rightarrow \bar{n}$  signal events and atmospheric neutrino backgrounds. We observed 11 events, compared with the expected number of background events 9.3. The upper limit of nuclear lifetime is calculated as  $3.6 \times 10^{32}$  years at 90% CL, significantly improved from the present best-limit  $1.9 \times 10^{32}$  years of SK-I.

### Contribution Title

Neutron-antineutron oscillation search at Super-Kamiokande

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