

# Drafting the «basic» paper

November 27 2020

Xe-doping analysis meeting

# Skeleton of the basic paper

- Aimed at **JINST** as a Technical Note.
- To speed up the review process, we suggest to present it as a Technical Paper (limited authorship) of the PDS-SP Consortium. In this case, it must be reviewed only by the Consortium leaders (Ettore and Dave) and, if needed, presented in a Consortium meeting. (\*)
- Contain all the information of relevance for DUNE to support the Run II with the Xe doping
- Should provide some information relevant to the whole LAr community

(\*) Like for instance P. Carniti, et al. JINST 15 (2020) 01, P01008 or A. Falcone et al. Nucl. Instrum. Meth. A 985 (2021) 164648 or

# Content

- Description of ProtoDUNE-SP and the Nitrogen contamination issue
- Description of the X-Arapuca setup and trigger
- Implementation and monitoring of Xe doping (including the purity issues)
- Effect of doping in X-Arapuca (ratio quartz/no quartz) as a function of doping and stability
- Effect of doping in the ProtoDUNE-SP PDS: stability, uniformity
- Run with electric field and check of no effects on TPC tracks

# Draft of TOC and main writers (I)

- Introduction: advantages and opportunities of Ar-Xe mixtures for large volume LArTPCs and DUNE [**Francesco T.** , Francesco P., F. Cavanna]
- Brief description of Protodune-SP and the Xe doping system [**Francesco P.** Furkan, Fatma, Francesco T., Sehran]
- Description of the X-Arapuca telescope and trigger [**Luca Bomben**, Carla, Dante]
- Description of the runs and issues encountered (contamination etc.) [**Sehran** and Francesco P.]
- Data selection and deconvolution for the X-ARAPUCA runs (**Niccolò**, Henrique, Carla)

## Draft of TOC and main writers (II)

- Quarz/no-quarz as a function of doping for the X-Arapuca [**Niccolò**, Furkan, Fatma, Carla]. Stability and discussion of Xe as recovery plan in case of Nitrogen contamination [**Carla**, Flavio]
- Event selection for the PDS (in principle no need to re-describe deconvolution) and available runs [**Dante**, Kyle, Stefania, Brian]
- Stability and uniformity as seen in ProtoDUNE [**Brian**, **Dante**, Kyle, Stefania]
- Runs with electric field and impact on tracks [**Stefania**, Brian, Dante, Kyle]
- Conclusions

# Time schedule and overleaf

- When we want to have the paper ready? I think it is realistic to have it by February 2021
- For the next meeting: plots and figures that we want to put (possibly in a “final” form). If possible, some text on the descriptive parts
- Texting during the winter break
- Starting the review of the document as a whole in mid January

Overleaf link:

<https://www.overleaf.com/3874521638bqvjphhynfpv>

[you need a standard overleaf account. If you use your cern account, you’ll be waived a “professional” account by default]

Since we are a relatively small group, I created a link where everyone can read and write. **Please use it with some caution** 😊

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