

# Alessandro Thea

## Candidate Statement

I am thankful to be nominated for the position of DAQ Consortium Leader. The DAQ system is essential to the DUNE physics program and to the success of DUNE itself. I am enthusiastic about the opportunity to serve the DAQ consortium over the next four years, which will be decisive for both DAQ and DUNE.

I am an experienced experimental particle physicist with two decades of involvement in significant High Energy Physics (HEP) experiments, both at the LHC and on an international scale.

Over the past 15 years, I've held leadership positions in scientific and technical domains. On CMS, primary focus has been on the CMS Level-1 (L1) Trigger system. From 2013 to 2016, as the L1 Trigger Online Software Coordinator, I led the design of the online software system for the Phase-1 upgrade, coordinated the international software team, and commissioned the upgraded system, concurrently supporting the legacy system. Serving as the L1 Technical Coordinator from 2017 to 2019, I was responsible for the operation of the overall L1 trigger system, which included electronics and interfaces to detector systems. As the Far Detector Technical Lead for the DUNE DAQ consortium since 2019, I've been pivotal in designing the DUNE DAQ system and delivering the Technical Design Report (TDR).

From my perspective, the DUNE DAQ consortium will face 3 major challenges in the next 4 years:

### **ProtoDUNE operations vs DUNE preparation**

The upcoming NP04 and NP02 runs present a unique opportunity to assess the maturity of the DAQ system in a real data-taking environment at scale and to train a new generation of DAQ experts. However, it is crucial to strike a balance between these activities at ProtoDUNE and the procurement and development activities to prevent delays in the FD installation at SURF. I will collaborate with the DAQ coordination team to draft a comprehensive work plan for 2024/25. Additionally, I will liaise with the DAQ management board and DAQ consortium board to secure the necessary resources for its implementation.

### **Delivery of the FD DAQ system in 2026/27**

Successfully delivering the DAQ system at the FD requires completing major capital procurements and the development of major DAQ systems, such as CCM and DQM. I believe that consortium engagement and synergy among members will be essential. Both have been affected by recent global travel restrictions; therefore I think reinvigorating consortium engagement is a priority. I intend to create new opportunities for members to meet and collaborate in person (e.g development weeks, training sessions). I also intend to review and improve communication to maximize member participation.

### **Near Detector DAQ**

The last major challenge will be identifying responsibilities and funding for the ND DAQ system. This will be essential in preparation for the ND MoU process that will follow the release of the ND TDR (expected Q1 2025). I will engage with DUNE spokespeople and ND Technical Coordination to involve new institutes and, possibly, new countries in the DAQ consortium. I will also liaise with Funding Agencies already involved in DAQ to explore possibilities for additional resources to cover the ND system.