ÖAW AUSTRIAN ACADEMY OF SCIENCES

MARIETTA BLAU INSTITUTE FOR PARTICLE PHYSICS

VTX WG5 Introduction

2nd General VTX workshop, 20-22 April 2026
DESY

Belle II VTX

Christian Irmler

WG5: System Integration

- **Readout electronics**
  - Data readout
  - Chips configuration
  - Fast optical links
  - Interfaces to Belle II
    - DAQ
    - Trigger Timing Distribution (TTD)
    - Run / slow control
  - Track trigger
    - Transmit TTT data to Belle II trigger system
- **Powering, GND**
  - Power supplies for LV and HV, power cables
  - Grounding and shielding scheme
- **Monitoring**
  - Temperatures, voltages, currents, humidity, air and water flow, water leak, radiation, etc.
  - Interlock
  - Hard-, firm- and software
- **Cooling services**
  - Chiller(s) and control unit for water cooling
  - Cold and dry air / N_2 supply
  - Piping (water and air)
  - Water leak detection
- **Run / slow control**
  - Entire software for control, monitoring, data acquisition and data quality monitoring
  - Server infrastructure for VTX operation

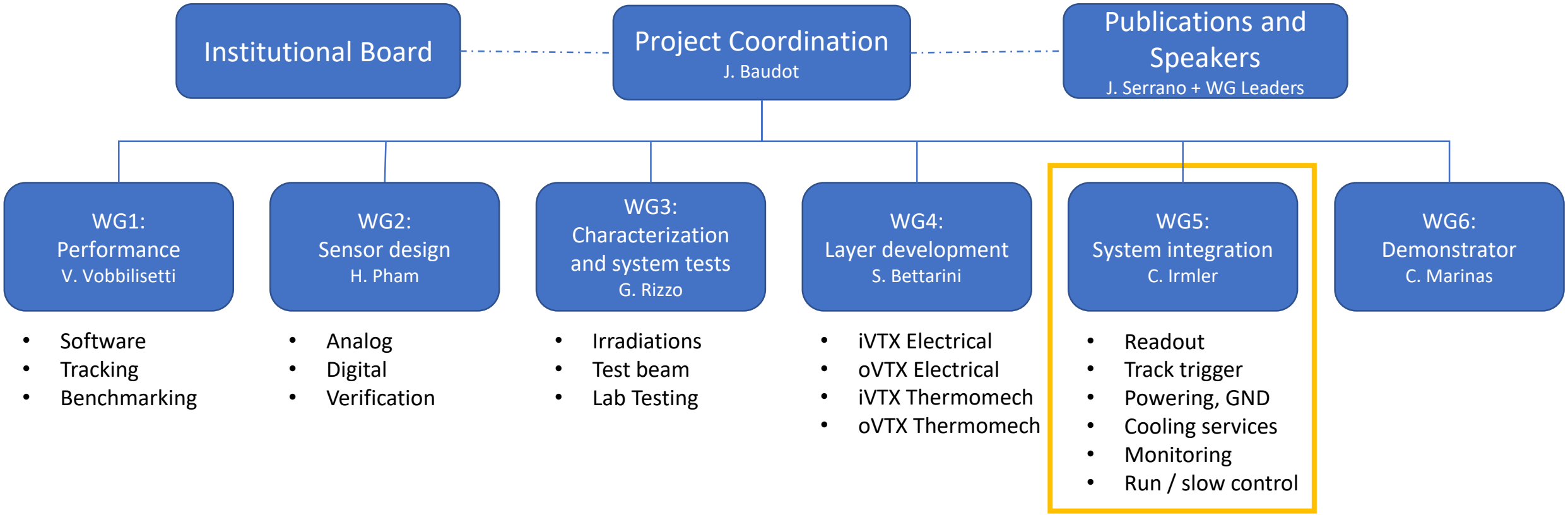
WG5 Topics Today

- Status reports lpGBT for iVTX and oVTX
  - Irradiation results
  - lpGBT prototype pcb for iVTX
- Report from Chinese groups
  - Groups have expressed their interests on back-end, firmware, power supplies
  - Discussion on what is required to start work
- Requirements on trigger interface
  - Trigger timing precision
  - Link bandwidth, etc.
- WG6: Plans for OBELIX telescope

WG5 general	*Christian Irmler*
Building 5, auditorium, DESY	08:00 - 08:10
Results of lpGBT and VTRx+ irradiation campaign	*Markus Friedl*
Building 5, auditorium, DESY	08:10 - 08:35
Update lpGBT testing for iVTX at CPPM	*Patrick Breugnon*
Building 5, auditorium, DESY	08:35 - 08:55
Report from Chinese Groups WG5	*Jingzhou Zhao*
Building 5, auditorium, DESY	08:55 - 09:15
Requirements on the Interface between VTX back-end and Belle II Trigger	*Taichiro Koga*
Building 5, auditorium, DESY	09:15 - 09:30
WG6 - plan for OBELIX telescope (TBC)	*Carlos Marinas*
Building 5, auditorium, DESY	09:30 - 09:50

Thank You

VTX Organisation



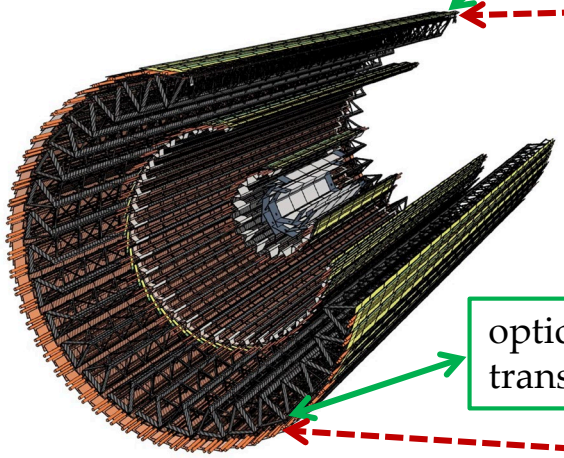
MBI (Vienna)
IHEP (Beijing)
University of Jilin
CPPM (Marseille)
IJCLab (Orsay)
IPHC (Strasbourg)

University of Bergamo
INFN Pavia
INFN & University of Pisa
University of Bonn
University of Dortmund
University of Goettingen

KEK (Tsukuba)
University of Tokyo
IPMU (Kashiwa)
IFCA (CSIC-UC, Santander)
IGFAE (Santiago de Compostella)
IFIC (CSIC-UV) (Valencia)

ITAINNOVA (Zaragoza)
Queen Mary University (London)
RAL (UK)

VTX Readout Concept



Dock Box
optical transceiver
DC/DC converters
Dock Box
optical transceiver
DC/DC converters
optical transceiver
Back-end electronics
Belle II DAQ
Belle II trigger & clock
L1 trigger
Run control
Slow control & config
Power supplies

power
e-link: data, cfg, clock, trigger

Optical transceivers placed as close to the modules as possible

radiation hard components ← → commercial components