# LHC Job-Matching Event

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A bit of background:

- **2011-2016:** PhD in Particle Physics at McGill University with the BaBar experiment at the SLAC in California, US working on rare decays of B mesons, specifically world first measurement of $B^+ \to K^+ \tau^+ \tau^-$.

- **2016-2024**: Postdoc at Olemiss (U.S.), University of British Columbia (Canada), and DESY (Germany) on the Belle II experiment at KEK, Japan where I worked on an important **test of Lepton Flavour Universality Violation (LFUV) test:** $R(D*)$. I also worked on an algorithm for B-tagging and calorimeter cluster identification.

- At Belle II, I had many roles such a semileptonic working group convenor and data production manager.
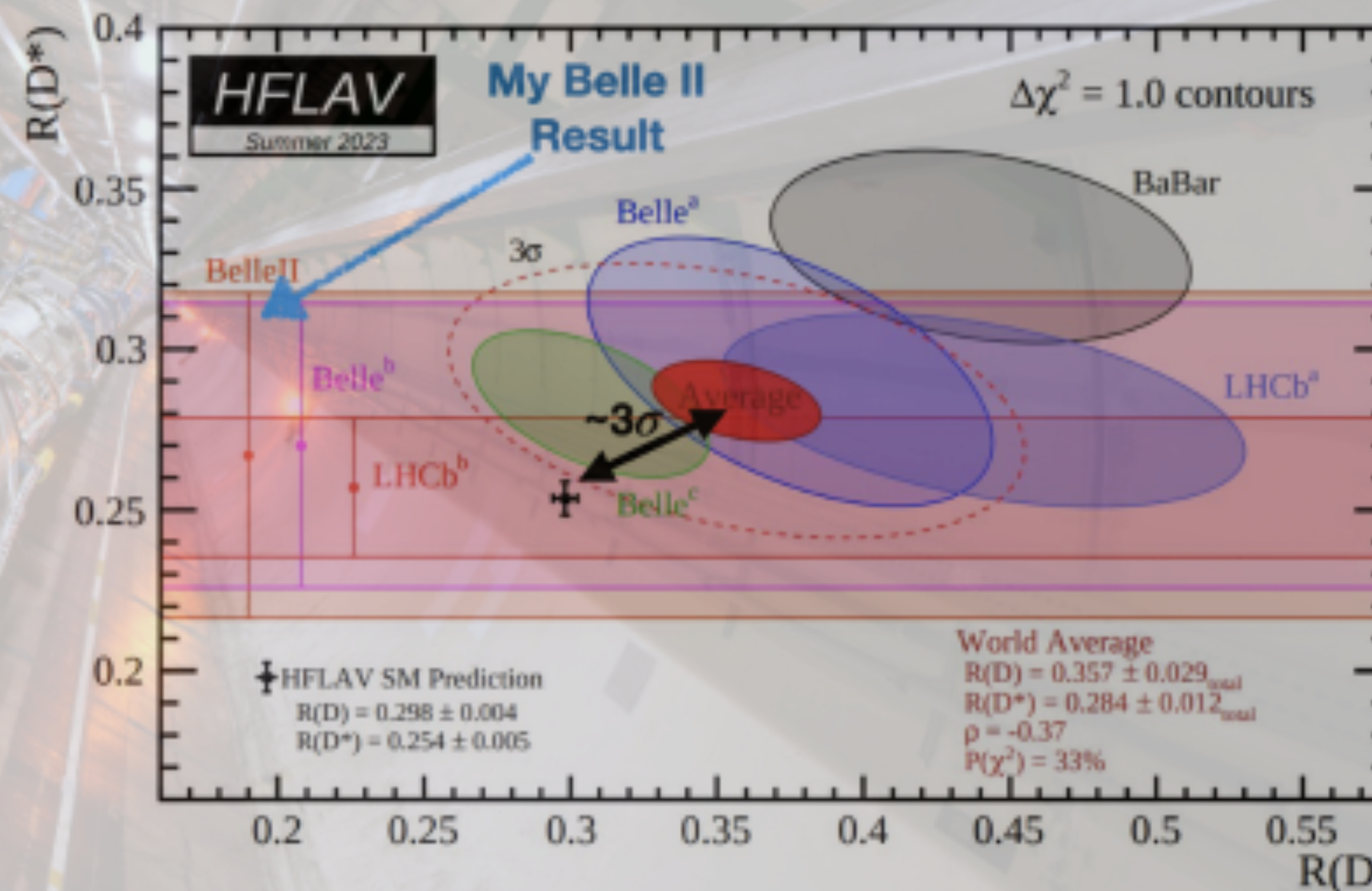
Heavy focus on LFUV in b-mesons and baryons

I recently received the 2024 MTA Lendulet grant at ELTE university in Budapest to carry out LFUV measurements at LHCb.

Institute, department, group

Located in the heart of Budapest, the Institute of Physics and Astronomy is ranked first in Hungary.

You will be part of LHCb-ELTE.

The group has 3 main activities:
- Semileptonic baryon decays
- Radiative Penguin decays
- PicoCal lab

The Job

Job 1: Measure $R(\Lambda_c)$ with Run 1+2+ what we can from Run 3 data.

- Tune HLT lines, develop and train MVA for analysis optimisation, determine systematics.
- Prepare analysis document, go through review.
- Cooperate with a PhD student on this effort.
- Target: Preliminary result on Run 1 + 2 by Moriond 2025.
- Postdoctoral candidate expected to take shifts as well at CERN.
- Position for 2 years and renewable.

Possibly sensitive to new physics
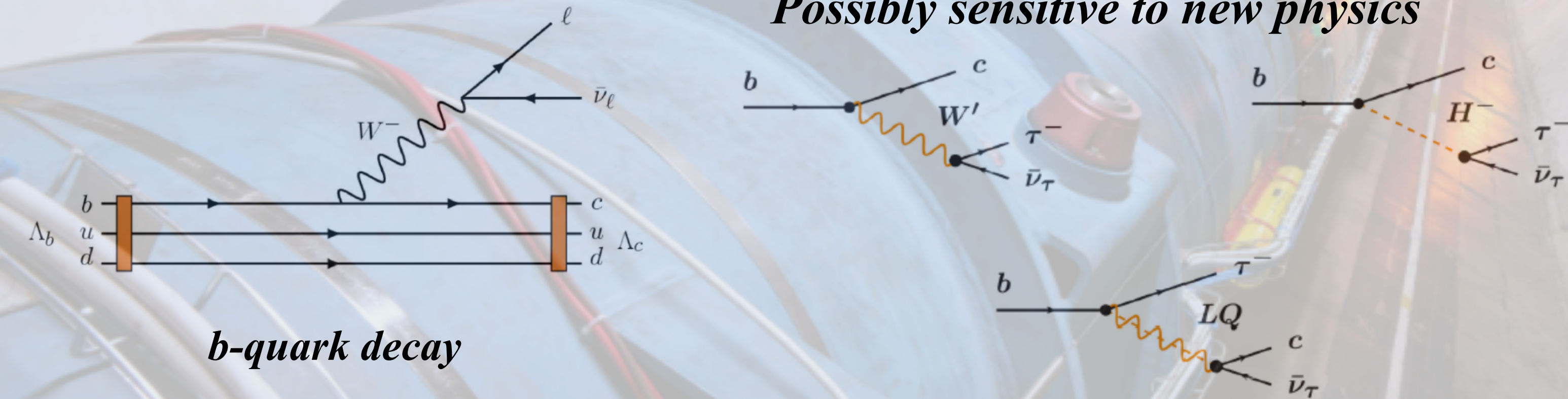
b-quark decay
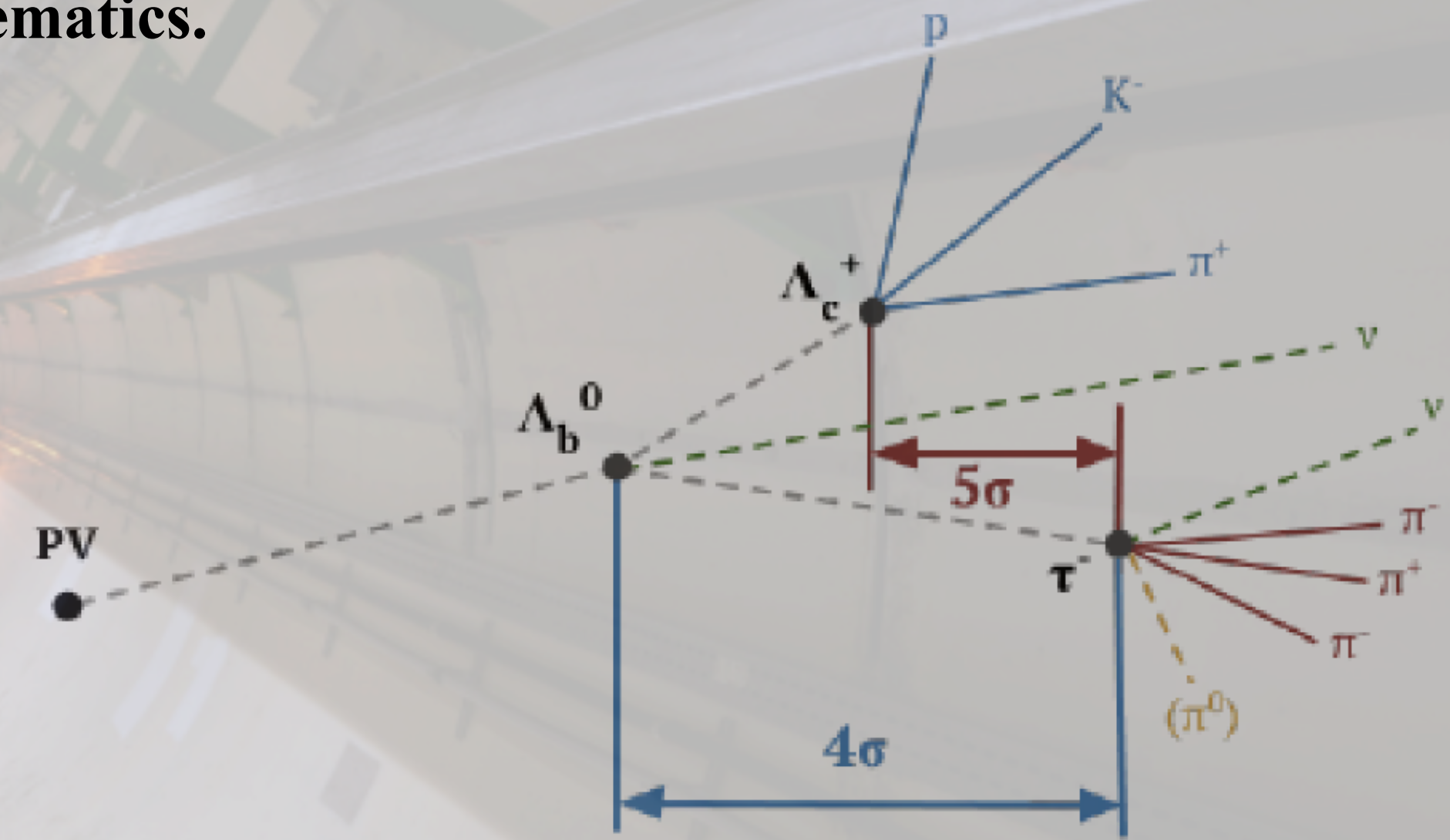
Vertex information available at LHCb

Requirements:

- PhD in particle physics or related field.
- Experience with analysis and collaborative work.
- Strong technical skills (C++, Python) .

The Job

Target 2: Set up a caloLab to contribute to the PMT R&D for the upcoming
- **Assemble optical bench and check data acquisition chain.**
- **Perform benchmark tests on PMT such as**
- **Contribute to ECal software such as calorimeter clustering studies etc..**
- **Prepare NIM paper**
- **Position for 2 years (and renewable).**

Sample Bench
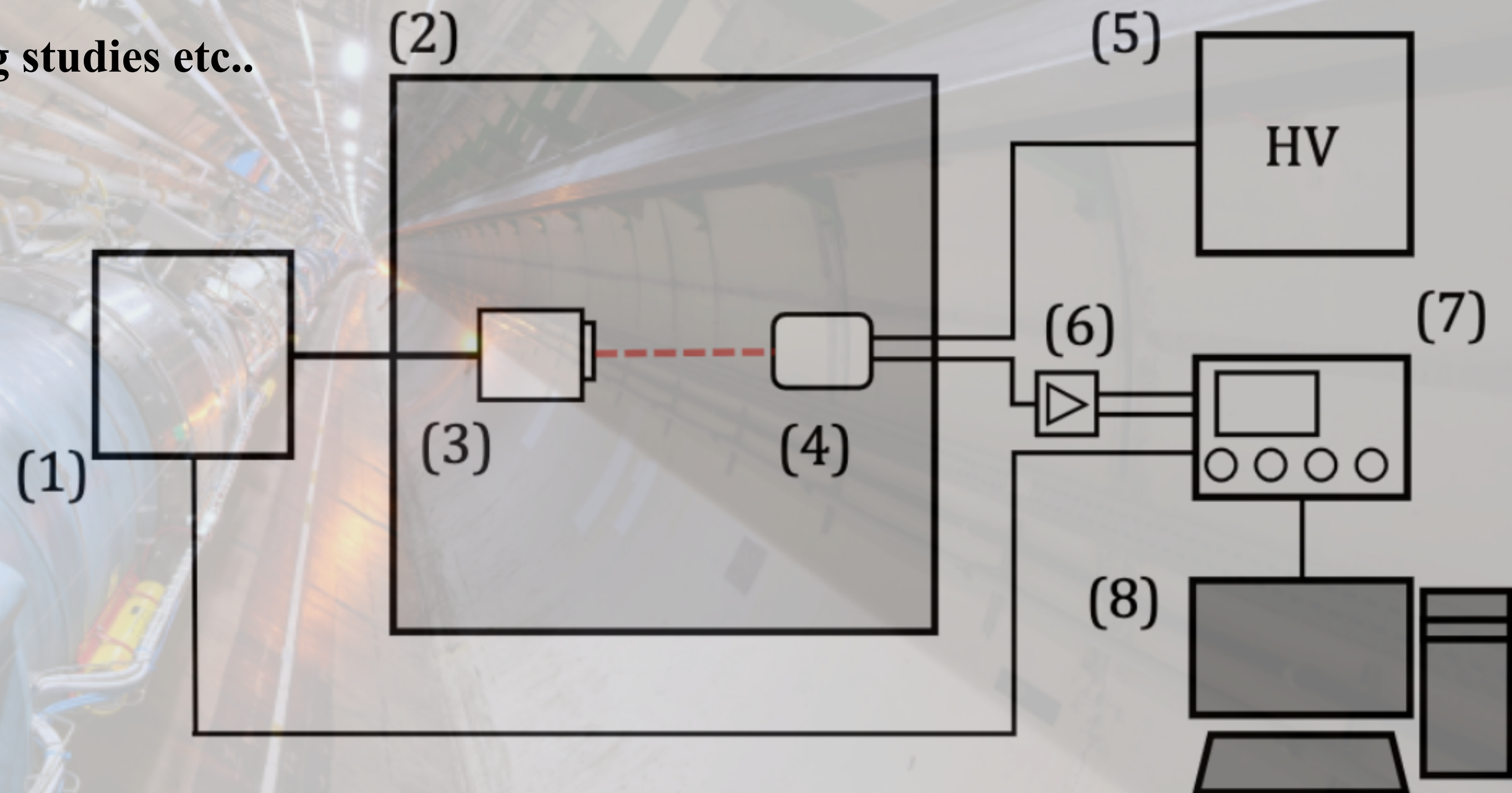
Requirements:

- **Proficiency in setting up and operating electronics, such as signal processing, high-voltage systems, and gain calibration.**
- **Experience with hardware and software used for collecting data**
- **Familiarity with programming languages like Python, C++, ROOT or MATLAB**
- **Knowledge of light transmission, fiber optics, and calibration systems relevant to PMTs.**