

# Fluorescence spectroscopy and microscopy

## data analysis in LabVIEW

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Start date: March 2024, End date: 31 June 2024

7 meetings 2h long online meetings via Zoom + 1h for exam (15h),

Registration deadline is 28th February 2024

### What you'll learn:

- A) Fluorescence spectroscopy data analysis:
  - a. What time-correlated single photon counting (TCSPC) is,
  - b. How to analyze time-resolved data from TCSPC experiment,
  - c. How to include convolution in fluorescence decay curve fit,
  - d. How to analyze fluorescence anisotropy decay curve,
  - e. What is fluorescence lifetime imaging microscopy (FLIM),
  - f. How to perform phasor analysis and interpret phasor plot,
- B) LabVIEW:
  - a. how to setup LabVIEW environment for free,
  - b. how to use the interface efficiently,
  - c. how to create project with main Vi and library,
  - d. how to create subVI,
  - e. how to import/save data from/to text/binary file,
  - f. how useful for loop, tunnel mode, shift register, formula node, case structure, ramp pattern and indexing are,
  - g. how to create list of folders and move through the file structure automatically,
  - h. how to automatically: create path, concatenate strings, create folder,
  - i. how to work with arrays,
  - j. how to perform fit and to check goodness of fit,
  - k. what palate use to solve optimization problem,
  - l. how to design GUI,
  - m. what a event-driven state machine is,

**Lecture language:** English or Polish depends on the presence of foreign PhD students among the registered people

**Method of assessment:** short one-choice test, semester project presentation