SAOT Summer Academy 2020 - Course A

Photoacoustic imaging for biomedical applications: basics, state of the art and current research

Lectures and exercises: Benjamin Lengenfelder, Moritz Späth, and Florian Klämpfl

Topics: Optical Metrology, Optical Material Processing, Optics in Medicine, and Computational Optics

Photoacoustic imaging (PAI) is an imaging modality paving currently its way into clinical application. Laser pulses are sent into the tissue and when they are absorbed, they produce heat. The tissue expands due to the heat emitting an acoustic wave which can be measured at the surface. Based on this, the distribution of the absorbing structures within the tissue can be reconstructed. This course covers the basics of PAI, state of the art as well as current research. Lectures will be combined with exercises. As the exercise are mainly carried out using the programming language Python, the course includes an introduction into using Python and related tools in research and science.

Time Table

	Montag	**Dienstag**	**Mittwoch**	**Donnerstag**	**Freitag**
9:00-10:30		Introduction into using Python in Research and Science 2	Basics of Photoacoustics 1	Remote Photoacoustics 2	Student presentations 1
13:15-14:45	Introduction and Managing scientific texts and program code with git	Interaction of light with tissue 1	Basics of Photoacoustics 2	Prepare presentation on specific topics of PA	Student presentations 2
15:15-16:45	Introduction into using Python in Research and Science 1	Interaction of light with tissue 2	Remote Photoacoustics 1	Prepare presentation on specific topics of PA	