



Content of the lectures

Chapter	Astronomy	Optics/Photonics	Instrumentation examples
Introductory concepts	<ul style="list-style-type: none"> + Luminosity/Fluxes. + Photometric bands. + Distances/Parallax. + Photometry in astronomy. 	<ul style="list-style-type: none"> + CCD cameras. + Introduction to wave optics. 	
Light transport in astronomical instruments	<ul style="list-style-type: none"> + Galactic archeology. + Red-shift surveys. 	<ul style="list-style-type: none"> + Concept of optical mode. + Slab waveguide. + Optical fibers. + Focal ratio degradation. + Photonic lantern. 	<ul style="list-style-type: none"> + Multiple Object Spectrographs. + Integral field spectroscopy.
Elements of adaptive optics	<ul style="list-style-type: none"> + Concepts in atmospheric turbulence. + Astronomy with adaptive optics. 	<ul style="list-style-type: none"> + Aberrations and waveoptics. + Wavefront sensing. + Deformable mirrors. + Coupling into SMF. + Laser Guide Stars. 	<ul style="list-style-type: none"> + Vortex coronagraph.
Filters in astronomy	<ul style="list-style-type: none"> + Multiband astronomy. 	<ul style="list-style-type: none"> + Transfer and scattering matrices. + Multilayer coatings. + Fiber Bragg gratings. 	<ul style="list-style-type: none"> + GNOSIS instrument
Spectroscopy	<ul style="list-style-type: none"> + Science cases for spectroscopy. 	<ul style="list-style-type: none"> + Gratings. + Arrayed Waveguide Gratings. + SWIFTS. + Photonic dicer. + Frequency comb calibrators. 	<ul style="list-style-type: none"> + PIMMS. + High-resolution spectrographs.
Interferometry	<ul style="list-style-type: none"> + Science cases for interferometry. 	<ul style="list-style-type: none"> + Principles of interferometry + Integrated optics building blocks. + Integrated optics beam combiners. 	<ul style="list-style-type: none"> + PIONIER.