Name: Matriculation number:

1	2	3	4	5	6	7	8	9

Exams: Optical Metrology and Sensing

Wednesday, 17. 02. 2016, 13:10-14:40

The points given at the end of each question indicate the supposed number of points, but do not have to be the final rating. Supply materials (such as calculators ...) are not permitted.

Draw sketches whenever it seems appropriate!

1. What does the degree of coherence describe and how does it influence the law of interference? How is the visibility connected to it? 7p
2. What is the meaning of spatial and temporal coherence? 3p
3. Two plane waves form an interference pattern. Describe this resulting pattern depending on the angle between the two respective propagation directions of those two plane waves! 5p
4. How can white-light interference patterns be generated with a Michelson interferometer and what are they used for? 5p
5. Explain the setup of a Young interferometer! How does it work? 8p
6. Explain the functionality of a Fabry-Perot spectroscope! 4p
7. Name three methods for the static evaluation of interference fringes and explain one of those techniques in detail! 7p
8. Give and describe an example of an indirect wavefront sensor! 4p
9. What limits the resolution of earth-bound telescopes? Explain a technique to increase the resolution of such a telescope further! 5p
10. How is a hologram defined? Explain the recording and reconstruction of a hologram! 4p
11. Explain one method of holographic interferometry! 4p