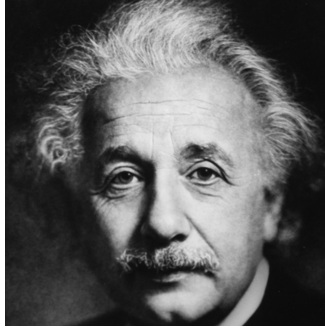


# General Relativity II



## Content

- Basics of General Relativity
- Experimental tests:  
light deflection, perihelion rotation, geodesic precession, Thirring-Lense effect
- Gravitational waves:  
plane waves, quadrupole radiation, direct and indirect proof of gravitational waves
- Static star models:  
star equilibrium, inner Schwarzschild metric, relativistic stars
- Dynamic star models:  
isotropic time-dependent metric, gravitational collapse, supernova
- Cosmology:  
Robertson-Walker metric, cosmological standard model

## References

- T. Fließbach, *Allgemeine Relativitätstheorie*, Spektrum Verlag
- H. Grote, *Gravitationswellen - Geschichte einer Jahrhundertentdeckung*, C.H. Beck
- J. B. Hartle, *Gravity - An Introduction to Einstein's General Relativity*, Addison Wesley
- U. E. Schröder, *Gravitation: Eine Einführung in die allgemeine Relativitätstheorie*, Verlag Harri Deutsch
- E. Schrödinger, *Space-Time Structure*, Cambridge University Press
- H. Stephani, *Allgemeine Relativitätstheorie*, Deutscher Verlag der Wissenschaften
- R. Vaas, *Signale der Schwerkraft*, Kosmos

- S. Weinberg, *Gravitation and Cosmology - Principles and Applications of the General Theory of Relativity*, John Wiley & Sons
- S. Weinberg, *Cosmology*, Oxford University Press

## Organizational Remarks

- 2 hours per week
- 4 ECTS credits
- Certificate for active participation:
  - Seminar talk of 15 minutes at semester end
  - Suggestions for topics announced middle of December
- **Oral module exam possible**