

# Differential Geometry for Physicists: 52463

(**block course**, PD Dr. Denis Kochan)

## Semesterkalender Winter 2022/23

Oktober

Mo	Di	Mi	Do	Fr	Sa	So
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

November

Mo	Di	Mi	Do	Fr	Sa	So
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Dezember

Mo	Di	Mi	Do	Fr	Sa	So
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Room 9.2.01:

**Mo-Thu: from 18:00 (sharp) – 20:00**

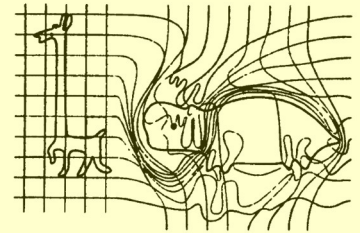
**Fr: from 14:00 (sharp) – 16:00**

### Literature:

Marián Fecko;

*Differential Geometry and Lie Groups for Physicists*,  
Cambridge University Press, 2006

## :SYLLABUS:



Coordinate transformation:  
giraffe, hypo or JD?

- 1 The concept of a manifold
- 2 Vector and tensor fields
- 3 Mappings of tensors induced by mappings of manifolds
- 4 Lie derivative and Killing's vector fields
- 5 Exterior algebra
- 6 Differential calculus of forms
- 7 Integral calculus of forms
- 8 Stokes' theorem and its applications
- 9 Field theory in the language of differential forms
- 10 Curvature and parallel transport
- 11 Fiber bundles – a pedestrian introduction

