Announcement

Mathematical Physics

PD Dr. Maxim A. Efremov

Description

This special lecture series aims at providing students with a Bachelor or Master degree with advanced mathematical tools to solve different problems faced by physicists, engineers, and applied mathematicians. They include (i) the Fourier method for partial differential equations (diffusion, wave, and etc.), (ii) method of integral transformations, (iii) the Green function and its applications, (iv) integral equations, etc. Each method is illustrated by both well-known and completely new examples of physics problems appeared within classical and quantum approaches.

Content

- Partial differential equations
- Fourier method and special functions
- Method of integral transformation
- Green function and its applications
- Classical orthogonal polynomials
- Integral equations

Literature

- P.M. Morse and H. Feshbach, *Methods of Theoretical Physics* (1953)
- G.B. Arfken, H.J. Weber, and F.E. Harris, *Mathematical methods for physicists* (2012)
- A.N. Tikhonov and A.A. Samarskii, *Equations of mathematical physics* (2011)
- E. T. Whittaker and G. N. Watson, *A Course of Modern Analysis* (1948)

Additional Information

Lecture with exercises (5 hours/week)
6 ECTS credits

Lecturer

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