

Elliptic functions and applications

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Elliptic functions are, roughly, functions on the complex plane which are periodic in two directions. The theory of elliptic functions, created in the works of Abel and Jacobi, occupies a very special position in mathematics because of its both elegance and depth. Besides, it serves as a foundation to the theory of elliptic curves and as such is related in a fundamental way to algebra, analysis, geometry and number theory. Elliptic functions are also widely used in mathematical physics, since many important equations have elliptic solutions. You will learn how to deal with elliptic functions and will have an opportunity to do your own research studying (mostly, by algebraic methods) solutions to certain problems in quantum mechanics such as, for example, the Calogero-Moser problem. There are no essential prerequisites for this project; however, some knowledge of complex analysis would be a plus. The project can be an introduction to a circle of problems for the future postgraduate study.

REFERENCES

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