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BOOK REVIEW

Calogero-Moser Systems and Representation Theory, by Pavel Etingof, European Mathematical Society, Zürich, 2007, ix + 92pp., ISBN 978-3-03719-034-0.

Pavel Etingof is a Professor of Mathematics at Massachusetts Institute of Technology. He received his MS degree in applied mathematics from the Moscow Oil & Gas Institute in 1989, and his PhD in mathematics from Yale University in 1994. Igor Frenkel was his thesis advisor. He went to Harvard as a Benjamin Peirce Assistant Professor in 1994, and joined the MIT mathematics faculty as assistant professor in 1998 (professor in 2005). Professor Etingof's research interests are primarily in studies which intersect representation theory and mathematical physics, such as quantum groups. In 1999 Etingof received a Clay Mathematics Institute Prize fellowship.

The author is among the famous mathematicians working in the field of dynamical systems, their properties and quantization. The book is a set of 11 lectures centered around the exclusive properties of the Calogero-Moser systems delivered at ETH, Zurich in 2005.

In the first lecture the author introduces the basic notions and definitions, such as Poisson algebras and Poisson manifolds (smooth, analytic, and algebraic), moment maps, and analyzes their properties. Next he introduces the classical Hamiltonian reductions and generalizes them to Hamiltonian reduction along a co-adjoint orbit. At the end the Calogero-Moser space of Kazhdan, Kostant, and Sternberg is introduced, which plays central role in these lectures.

Lecture 2 is a short introduction to classical Hamilton mechanics and to the theory of integrable systems. The author starts with the standard notion of complete integrability of a given dynamical system with N degrees of freedom: the presence of N integrals of motion in involution H_j, $j = 1, \ldots, N$. Then he applies the method of Hamiltonian reduction using subsequently each of these integrals, diminishing at each step the number of degrees of freedom by one. As a result the initial system is reduced to a system of one degree of freedom which is integrable by quadratures. Next it is explained that H_j can be viewed as the action