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Abstracts of Plenary and Invited Lectures

Section:

7. Lie Groups and Lie Algebras

1991 MS Classification:
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On representations of Lie superalgebras

We give a brief review and a summary of recent results concerning finite-dimensional representations of classical Lie superalgebras. The examples of these superalgebras are general linear Lie superalgebra $gl(m, n)$ and orhosymplectic Lie superalgebra $osp(m, n)$.
We present a solution to the problem of calculating characters of irreducible representations. In order to do this one needs to define Kazhdan-Lusztig polynomials for the category of finite-dimensional representations over classical Lie superalgebras and find an algorithm for their calculation. The last can be done using a geometric approach involing cohomology of G-sheaves on a compact homogeneous supermanifold G/P for different parabolic subgroups P. In particular we explain an analogue of Borel-Weil-Bott theorem for flag supemanifold.
Finally we discuss an unusual tensor product structure on the category of finite dimensional representations for the family of superalgebras $gl(m, n)$ which is closely related to all above topics.