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Titolo	Lectures on Real Semisimple Lie Algebras and Their Representations [[electronic resource] /] / Arkady L. Onishchik
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Sommario/riassunto	<p>In 1914, E. Cartan posed the problem to find all irreducible real linear Lie algebras. An updated exposition of his work was given by Iwahori (1959). This theory reduces the classification of irreducible real representations of a real Lie algebra to a description of the so-called self-conjugate irreducible complex representations of this algebra and to the calculation of an invariant of such a representation (with values +1 or -1) which is called the index. Moreover, these two problems were reduced to the case when the Lie algebra is simple and the highest weight of its irreducible complex representation is fundamental. A complete case-by-case classification for all simple real Lie algebras was given (without proof) in the tables of Tits (1967). But actually a general solution of these problems is contained in a paper of Karpelevich (1955) (written in Russian and not widely known), where inclusions between real forms induced by a complex representation were studied. We begin with a simplified (and somewhat extended and corrected) exposition of the main part of this paper and relate it to the theory of Cartan-Iwahori. We conclude with some tables, where an involution of the Dynkin diagram which allows us to find self-conjugate representations is described and explicit formulas for the index are given. In a short addendum, written by J. v. Silhan, this</p>

involution is interpreted in terms of the Satake diagram. The book is aimed at students in Lie groups, Lie algebras and their representations, as well as researchers in any field where these theories are used. The reader is supposed to know the classical theory of complex semisimple Lie algebras and their finite dimensional representation; the main facts are presented without proofs in Section 1. In the remaining sections the exposition is made with detailed proofs, including the correspondence between real forms and involutive automorphisms, the Cartan decompositions and the con...

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Autore	Rebbi, Claudio
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