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The Frattini Subalgebra of Restricted Lie Superalgebras

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摘要   In the present paper, we study the Frattini subalgebra of a restricted Lie superalgebra $(L,[p])$. We show first that if $L=A_1\bigoplus A_2\bigoplus\cdots \bigoplus A_n,$ then $\phi_p(L)= \phi_p(A_1)+ \phi_p(A_2)+\cdots + \phi_p(A_n)$, where each A_i is a p-ideal of L. We then obtain two results: $F(L)=\phi(L)=J(L)=L^{(1)}$ if and only if L is nilpotent; $F_p(L)$ and $F(L)$ are nilpotent ideals of L if L is solvable. In addition, necessary and sufficient conditions are found for ϕ_p-free restricted Lie superalgebras. Finally, we discuss the relationships of E-p-restricted Lie superalgebras and E-restricted Lie superalgebras.

关键词   restricted Lie superalgebras E-p-restricted Lie superalgebras   Frattini p-subalgebra ϕ_p-free p-elementary

分类号   17B40

The Frattini Subalgebra of Restricted Lie Superalgebras

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Abstract In the present paper, we study the Frattini subalgebra of a restricted Lie superalgebra $(L,[p])$. We show first that if $L=A_1\bigoplus A_2\bigoplus\cdots \bigoplus A_n,$ then $\phi_p(L)= \phi_p(A_1)+ \phi_p(A_2)+\cdots + \phi_p(A_n)$, where each A_i is a p-ideal of L. We then obtain two results: $F(L)=\phi(L)=J(L)=L^{(1)}$ if and only if L is nilpotent; $F_p(L)$ and $F(L)$ are nilpotent ideals of L if L is solvable. In addition, necessary and sufficient conditions are found for ϕ_p-free restricted Lie superalgebras. Finally, we discuss the relationships of E-p-restricted Lie superalgebras and E-restricted Lie superalgebras.

Key words   restricted Lie superalgebras E-p-restricted Lie superalgebras   Frattini p-subalgebra ϕ_p-free p-elementary

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