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Graf of embedded subalgebras of 11-dimensional symmetry algebra for continuous medium.
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Summary: We consider 11-dimensional Lie algebra for the models of the continuous medium mechanics. It is required to represent the graph of embedded subalgebras with the help of the optimal system. To this end inner automorphisms are considered. With the help of inner automorphisms important embeddings of subalgebras of smaller dimension into subalgebras of larger dimension are found. The table of rotation subalgebras of the dimensions from 1 to 11 is constructed. This table contains the important embeddings which are not composition of embeddings by means of subalgebras of the intermediate dimensions. The subalgebras no containing simple subalgebra of rotations can be embedded importantly only in subalgebras of dimension no more than two units. The subgraph of embedded subalgebras containing the simple subalgebra of rotations is constructed as the tree. The same construction is made for the subgraph of embedded subalgebras containing one operator of the rotation, operators of extension and time translation.

MSC:
35B06 Symmetries, invariants, etc. in context of PDEs
35Q35 PDEs in connection with fluid mechanics

Keywords:
Lie algebra of symmetries; optimal system of subalgebras; subgraph of embedded subalgebras; inner automorphism of algebra; subalgebra of rotations

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References:


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