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**V.N. Vagin, E.Yu. Golovina, A.A. Zagoryanskaya, M.V. Fomina.**  
**Exact and Plausible Reasoning in Intelligent Systems.** –M.: Fizmatlit, 2004,  
520pages.

The methods of exact (deductive) and plausible (abductive, inductive) reasoning in intelligent systems are considered. The deductive methods on graph structures are given: the inference on connection graphs, clause graphs and hierarchical structures. The distinct types of parallelism of inference on graph structures are reviewed. The classical modal logics S1, S4, S5 are described. The following types of nonmonotonical modal logics as logics of belief and knowledge, nonmonotonical McDermott's and Doyle's logics, autoepistemic Moore's logics and default Reiter's logics are proposed. The foundations of the argumentation theory and methods of abductive inference are given. The basic principles of building machine learning systems and decision making ones are considered. The problems of learning "without teacher" and "with teacher" are described. The inductive methods for the case with incomplete information and methods of the rough sets theory are presented.

The monograph is intended for students and postgraduates teaching on "Applied Mathematics and Informatics", "Informatics and Computer Science" and for specialists in areas of Artificial Intelligence, Intelligent Control and Decision Making Systems.