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Computer Algebra System (CAS) As a Mathematical Kernel for Web-based Physics Educational Symbolic Package

Absract

Computer Algebra System (CAS) is a mathematical tool used in many fields including engineering, medicine, biotechnology, physics, robotics, education, and more to help solve problems from simple to complex. This paper discussed the capabilities of the Computer Algebra System (CAS) software as a mathematical kernel (engine) and at the same time can be implemented as a visual interface in the web-based physics educational package. The Computer Algebra System (CAS) software discussed in this paper is Mathematica as a backend kernel while webMathematica is a front-end implemented in the web environment through Java web technologies (Java Servlets and Java Server Pages). This paper also illustrates how CAS programming language is implemented in the physics educational symbolic package.

Keywords

Computer Algebra System; Mathematica; Mathematical Kernel; Physics Symbolic Package; webMathematica