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(54) Title: **FEATURE MODELING IN A FINITE ELEMENT MODEL**

(57) Abstract: A method for simulating a physical system using finite element techniques, wherein two or more distinct models corresponding to distinct regions within the modeled system are solved, each with a corresponding evaluator. Nodes which lie on the boundaries between the models may have different values corresponding to the different models. When a particular model is solved, the evaluator for that model is used to obtain the appropriate values for each of these common nodes. In one embodiment, a first model is defined, then a region corresponding to a particular feature within the system is carved out of it. A finite element model corresponding to the feature is then inserted into the region. The finite elements may be adapted to share nodes on the boundaries between them.

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