SHAPE OPTIMIZATION TECHNIQUE USING MESH SUPERPOSITION METHOD

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The basis vector method which is the most general technique in shape optimization excels the node based technique in calculation time or reliability. Since it is always necessary to keep connectivity of elements the same from initial shape, there are many cases with difficult application. Moreover, whenever it updates shape, distortion of meshes may increase, and the reliability of a calculation result may decrease.

In order to ease the restriction about connectivity of elements, we propose the shape optimization technique using mesh superposition method. The mesh superposition method had been proposed by Fish et al. It is positioned as s method into which the hp method which are adaptive h method, p method, and those combination was developed. According to the local mesh which can express a detailed response is laid on top of the arbitrary portions in the global mesh expressing a global response, the method can obtain detailed response in the local mesh. Since nodes and boundary don't need to be in agreement among both meshes, very flexible modeling become possible. It is enabled to perform the shape optimization with difficult cases by the usual technique such as a move problem of a hole only by each of a global mesh and a local mesh maintaining connectivity to treat the local mesh as basis vector.