

**[Abstract]** Structural topology optimization has been treated as one of the most challenging tasks in structural optimization design, and is an innovative approach. For the problem of topology optimization designs of continuum structures, this paper summarizes and analyzes the present status and the development of Evolutionary Structural Optimization method. At the same time, Structural virtual design technology is also developing in some country. Because of some difficulty of three-dimension continuum structural topology optimization in theory and application, three-dimension Structural virtual design technology is not imperfect. The concept and basic methods of three-dimension structural virtual designs are simply introduced, and based on the the structural finite element model preprocess and postprocess software developed by France, a basic idea of their software system development is proposed in the proposed paper. The optimization mathematics model is set for typical automobile structures subjecting to many loads. Finally, two examples of typical automobile structures three-dimension structural topology designs are given. These examples show that the proposed method is very valid and effective for complex three-dimension structural topology optimizations, and is of wide engineering application prospects.

**Keywords: Structural virtual design, Automobile structure, Three-dimension structural optimization, Structural optimization, Structural topology Optimization;**