Qualitative Knowledge and Manufacturing Considerations in Multidisciplinary Structural Optimization of Hybrid Material Structures

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Abstract. An optimization approach is derived from typical design problems of hybrid material structures, which provides the engineer with optimal designs. Complex geometries, different materials and manufacturing aspects are handled as design parameters using a genetic algorithm. To take qualitative information into account, fuzzy rule based systems are utilized in order to consider all relevant aspects in the optimization problem. This paper shows results for optimization tasks on component and structural level.