

SENSITIVITY OF SHAPE PARAMETERS OF BRAKE SYSTEMS UNDER SQUEAL NOISE CRITERIA

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Abstract: We propose in this paper to deal with squeal noise reduction of brake systems through their shape optimization during the design step. We first expose the FEM model used to generate the stability diagram representing the squeal noise behavior of a given brake system shape. We then propose an objective function able to be included in a minimization problem and based on the stability diagram. We use then a parallel code to browse the objective function response surface through a Latin Hypercube Sampling design of experiment. A Self Organizing Map is then generated to expose the sensibility of our objective function to seven shape parameters of the FEM brake system. We present and analysis the SOM results for further optimization steps.