

**Presented Paper at SAE 24th Brake Colloquium & Exhibition**

We presented our fifth paper in SAE at 24th Brake Colloquium & Exhibition on October 10, 2006.

**1. TITLE**

**Fundamental Study on Thermal Behavior of Brake Discs**

Paper No. 2006-01-3203

**2. AUTHORS**

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**3. ABSTRACT**

We describe our practical procedure of designing thermally robust brake discs using conventional CAE. First, we review the literature describing brake judder, measurement technologies, and CAE focusing on brake discs. Second, we present some experimental results confirming what effect the basic configurations of brake discs have on thermal behaviors and the correlation between CAE simulation and physical test results. Finally, we propose a design strategy for developing thermally stable brake discs with an outer-hat configuration. We carried out a series of CAE experiments based on the Taguchi Method and determined the critical parameters for reducing the amount of coning. We also present some simplified models using classical theory regarding the strength of materials to discuss what effect the dimensional parameters have on the discs' thermal deformation.

View the presentation at the following URL:

<http://www.sae.org/events/bce/presentations/2006okamura.pdf>

**4. CONTACT**

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