

## THE CALCULATION OF ACOUSTIC MODES IN A COMBUSTION CHAMBER

### PROJECT AIM

The purpose is to enable the computation of unstable acoustic modes in a combustion chamber. To this end the Jacobi-Davidson method will be extended for nonlinear eigenproblems that arise when the material properties depend on the eigenvalues.

### PROGRESS

The project has been initiated in the summer of 2005. In the context of the traineeship the Jacobi-Davidson Method for quadratic problems has been implemented in the combustion code AVSP of CERFACS. Initial tests show a significant improvement in performance.

### DISSERTATIONS

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### SCIENTIFIC PUBLICATIONS

1. C. Sensiau, F. Nicoud, M.B. van Gijzen, J.W. van Leeuwen. A comparison of solvers for quadratic eigenvalue problems from combustion. Int. Journal for Numerical Methods in Fluids, 2008.

### PROJECT LEADERS

C Vuik

### RESEARCH THEME

Complex dynamics of fluids

### PARTICIPANTS

MB van Gijzen

### COOPERATIONS

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### FUNDED

TUD, Funding for a traineeship by CERFACS

1<sup>st</sup> 10% 2<sup>nd</sup> - 3<sup>rd</sup> 90%

### START OF THE PROJECT

2005

### INFORMATION

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