

# RAPTOR turbulent combustion code selected for next-gen supercomputer readiness project

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RAPTOR, a turbulent combustion code developed by Sandia National Laboratories mechanical engineer Joseph Oefelein, was selected as one of 13 partnership projects for the Center for Accelerated Application Readiness (CAAR).

CAAR is a U.S. Department of Energy program located at the Oak Ridge Leadership Computing Facility. It is focused on optimizing computer codes for the next generation of supercomputers.

Developed at Sandia's Combustion Research Facility, RAPTOR is a turbulent combustion code targeted at transportation power and propulsion systems. Scientific insights gained from RAPTOR could enable increased efficiency and reduced emissions in [internal combustion engines](#) and gas turbines.

"RAPTOR was chosen as a partnership project for its importance in discerning the complex fuel injection and [combustion](#) processes in modern engines and because it has demonstrated good scaling properties for operation on massively parallel supercomputers," said Oefelein.

Future supercomputers will use increasingly complex arrangements of multicore processors and graphics processor units to minimize electrical power consumption. With each new generation of supercomputers, scientists must adapt their complex codes to leverage advances in computational power and speed.

The CAAR partnership project will support preparations to operate RAPTOR on the Summit supercomputer, set to be delivered to Oak Ridge National Laboratory in 2017 and available to researchers in 2018. Summit is expected to provide at least five times the performance of the Oak Ridge computing facility's current supercomputer, Titan.

Provided by Sandia National Laboratories

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