REGISTRATION

Please send this registration via E-mail to mdf.seminare@itwm.fraunhofer.de or via fax to +49 (0) 631 / 3 16 00-10 90 until November 17, 2017. Please note that the number of participants is limited.

Technology-Day
»CDTire: Scalable Tire Model for Full Vehicle Simulation«
Wednesday, November 29, 2017, 11:45 a. m. to 5:00 p. m.
Fraunhofer-Zentrum, Fraunhofer-Platz 1, Kaiserslautern

☐ Yes, I plan to attend.

☐ No, I cannot attend, but I am interested in receiving further information.

Title, First name, Family name

Company/Institution, Department

Street, Number

Zip code, City

Phone

E-Mail

Date, Signature

INFORMATION

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Location

Fraunhofer-Institut für Techno- und Wirtschaftsmathematik ITWM
Fraunhofer-Platz 1, 67663 Kaiserslautern
www.itwm.fraunhofer.de

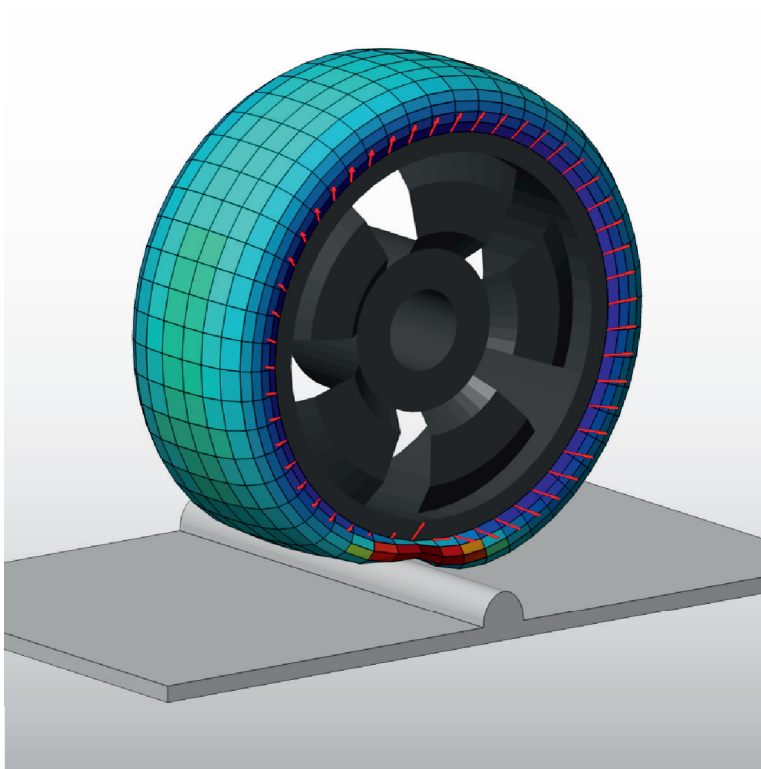
Directions: www.itwm.fraunhofer.de/en/how-to-reach-us.html

Fraunhofer ITWM

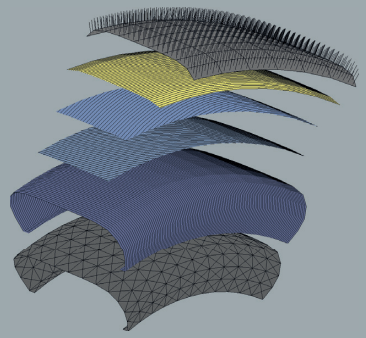
FRAUNHOFER INSTITUTE FOR INDUSTRIAL MATHEMATICS

TECHNOLOGY-DAY
CDTIRE: SCALABLE TIRE MODEL FOR FULL VEHICLE SIMULATION

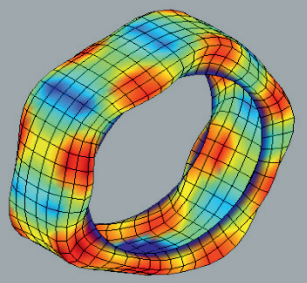
Wednesday, November 29, 2017
Fraunhofer-Zentrum, Fraunhofer-Platz 1, Kaiserslautern



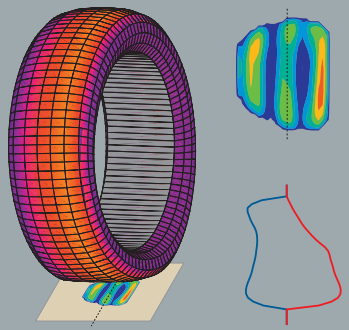
TECHNOLOGY-DAY
CDTIRE: SCALABLE TIRE MODEL FOR FULL VEHICLE SIMULATION



CDTire/3D: Functional layer concept



CDTire/NVH: Linearization of rolling tires



CDTire/3D: Advanced contact patch anlysis

CDTire – from tire/road interaction to accurate vehicle loads

CAE based methods are continuously accelerating the vehicle development process. Virtual vehicle models are driving over the digitized road surfaces of OEM's proving grounds, steered by virtual driver models. A key component in the load transfer process is the tire, thus, the accuracy and reliability of the virtual load prediction process crucially depends on the quality of the underlying tire model.

In the past, simplifications in the modeling were accepted in order to ensure the applicability of the models in productive development processes. Due to these simplifications the application range and accuracy of the load prediction was substantially limited. Motivated by unexploited potentials in the virtual development process, Fraunhofer ITWM has developed a full 3D structural tire model that extends both the application range as well as the achievable accuracy for full vehicle scenarios. Additionally, the new CDTire/3D opens the door to extended (simplified) tire parameterization strategies.

CDTire/3D is a member of the whole CDTire model family, which includes with CDTire/Realtime also a high-performance realtime capable tire model that is applicable for comfort and durability load simulation in the realtime context (HiL/MiL/SiL application, driving simulators).

In this workshop, we present the complete CDTire model family as well as advanced numerical methods for tire simulation. The workshop is addressed to vehicle engineers using tire simulations for almost all application fields, such as comfort, durability, NVH, active safety and advanced handling simulation.

Major Topics

- General theoretical aspects of tire modeling
- Structural 3D shell based approach for dynamic tire force prediction
- New aspects in tire parameter identification
- "Morphing" technique to create tire models for new tire sizes for which no measurements are available
- Dynamic simulation of the inflation gas and coupling with structural tire model
- NVH analysis using rolling tires and real roads including cavity mode effects
- Temperature creation and propagation in a tire
- Temperature influences on the tire behavior
- Variation of handling tire performance due to thermal influence
- Advanced handling applications like tire wear and rolling resistance prediction, run-on-flat capability, and tire performance optimization by adjusting suspension setup
- Realtime capable flexible-belt tire models
- Realtime co-simulation schemes for vehicle-tire simulation

Program

- Arrival and lunch snack at 11:45 a. m.
- Welcome and opening at 12:30 p. m.
- Tire modeling overview
- CDTire/3D – a structural 3D shell MBS tire model
- Advanced parameter identification techniques including the "morphing" method to adapt tire/rim sizes
- CDTire/Thermal – a detailed thermo-dynamical tire model to predict temperature propagation
- CDTire/Cavity – a dynamic model for the simulation of the inflation gas and coupling to the structural tire model
- CDTire/NVH – linearization of rolling tires including model adaptation techniques
- Advanced handling with CDTire: wear prediction, energy dissipation prediction, run-on-flat capability
- Integration of CDTire/Realtime into Fraunhofer's driving simulator RODOS®
- End of event at 5:00 p.m.

Speakers

- Dr. Manfred Bäcker, Fraunhofer ITWM
- Dr. Michael Burger, Fraunhofer ITWM
- M.Sc. Francesco Calabrese, Fraunhofer ITWM
- Dr. Klaus Dreßler, Fraunhofer ITWM
- Dipl.-Ing. Dipl.-Math. Axel Gallrein, Fraunhofer ITWM