Research activities
Name: Takashi KURAISHI

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Journal Articles Indexed by the Web of Science

[1] T. Kuraishi, K. Takizawa, and T.E. Tezduyar, "Space–time computational analysis of tire aerodynamics with actual geometry, road contact, tire deformation, road roughness and fluid film", *Computational Mechanics*, **64** (2019) 1699–1718, doi:10.1007/s00466-019-01746-8.

Invited Conference Papers

[1] T. Kuraishi, K. Takizawa, and T.E. Tezduyar, "Space–time computational analysis of tire aerodynamics with actual geometry, road contact, tire deformation, road roughness and fluid fim", in *Proceedings of Advances in Computational Fluid–Structure Interaction and Flow Simulation 2019*, Okinawa, Japan, (2019).

[2] T. Kuraishi, K. Takizawa, and T.E. Tezduyar, "Space–time variational multiscale method and isogeometric analysis with toplogy change", in *International Workshop on Multiphase Flows: Analysis, Modelling and Numerics*, Tokyo, Japan, (2019).

Contributed Conference Papers

[1] S. Utsuka, T. Kuraishi, T. Chigawa, K. Yamada, K. Takizawa, and T.E. Tezduyar, "Wall-thickness effects in diesel-oxidation catalysts", in *Proceedings of the 24th Japan Society for Computational Engineering and Science Conference*, Saitama, Japan, (2019).

[2] N. Yano, T. Kuraishi, K. Takizawa, and T.E. Tezduyar, "Computational analysis of foil bearing with foil thickness", in *Proceedings of the 24th Japan Society for Computational Engineering and Science Conference*, Saitama, Japan, (2019).

Honors and Awards

- **Grant-in-Aid for Research Activity start-up 19K24355** (JSPS), August 2019 – March 2021
- **Inoue Research Award for Young Scientists 2019**, "Space–Time Computational Analysis of Tire Aerodynamics with Actual Geometry, Road Contact, Tire Deformation and Fluid Friction"

Summary

- We conducted a tire structure analysis for doing FSI computation. The tire has actual geometry and different materials. Also, it has thin shell structures like a carcass, steel belts. The material of shells is anisotropic. We succeeded in computing such a complicated structure problem.
- We suggested the method which can convert from multi patches to T-spline mesh and applied it to the tire mesh. It makes the C^1 continuous shell even though the mesh has multi patches.