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PARTIES (PARTIcle-laden flows via immersed boundarIES):

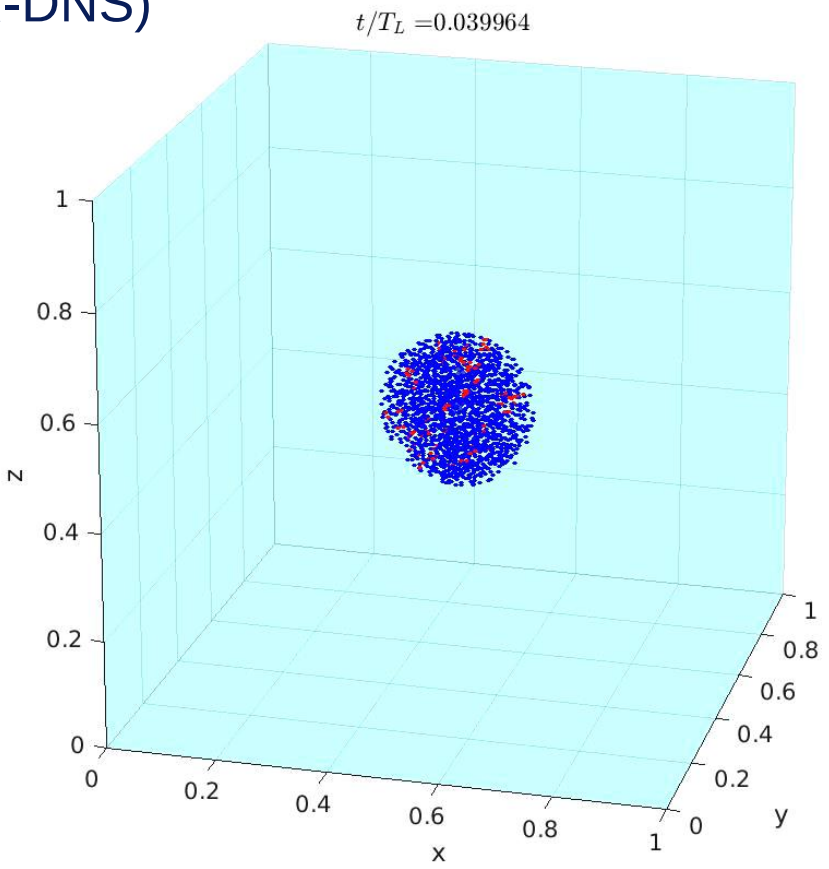
- DNS + particle equations of motion (PR-DNS)
- Parallelized using MPI

My Role:

- Investigate physical problems & maintain/advance code capabilities

Present Work:

- Explore cohesive particle behavior at high volume fractions in turbulent channel flow



[2] Zhao, K. (2021)

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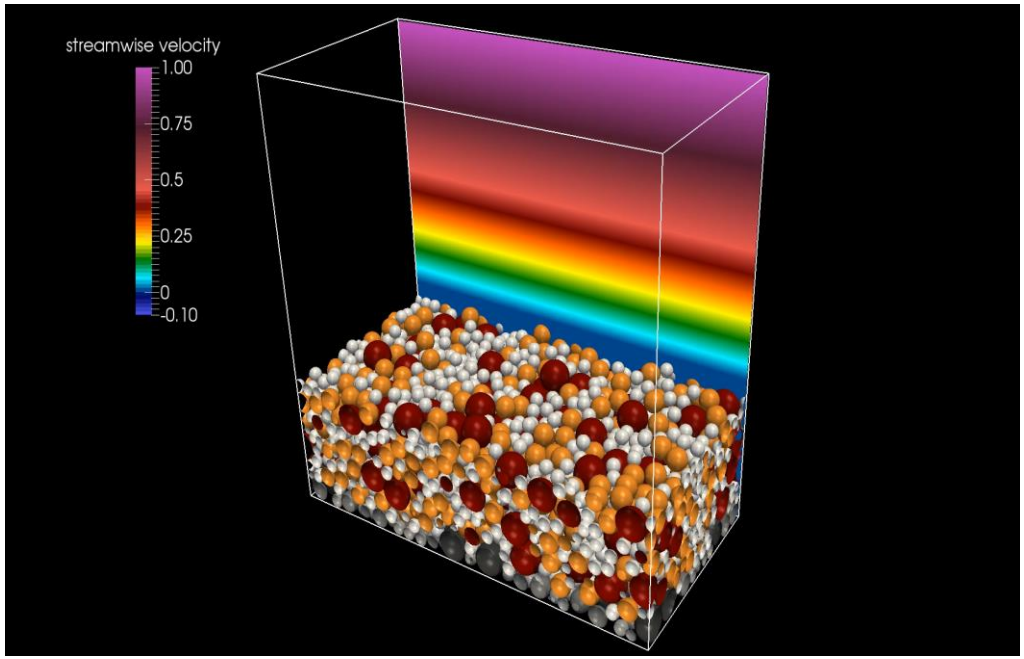
Challenges:

- Not original author…code is not well documented
- Turbulence work requires optimizations to existing code
- Modifications needed to handle nonuniform grids

[1] Biegert, E. K. (2018).

Goals:

- Better understand MPI & HPC software development
- Learn basic ML
- Improve visualization skills



References

- [1] Biegert, E. K. (2018). *Eroding Uncertainty: Towards Understanding Flows Interacting with Mobile Sediment Beds Using Gran-Resolving Simulations* [Unpublished doctoral dissertation]. University of California, Santa Barbara.

- [2] Zhao, K., Pommes, F., Vowinckel, B., Hsu, T.J., Bai, B., Meiburg, E., 2021 Flocculation of suspended cohesive particles in homogeneous isotropic turbulence. Submitted to *Journal of Fluid Mechanics*.