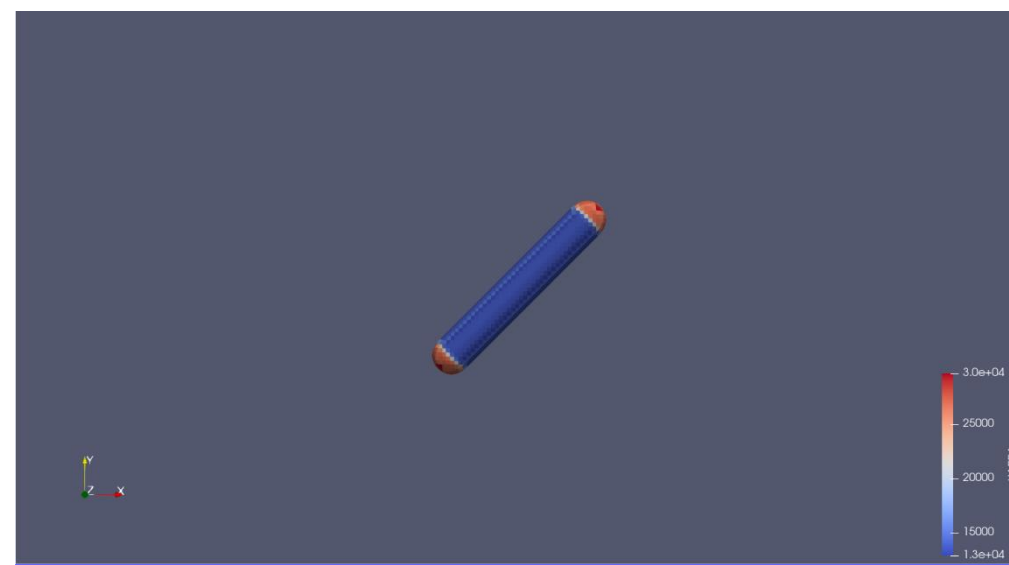


Joshua Spencer, Mechanical Engineering
Mentor: Marcus Herrmann, Professor
Arizona State University

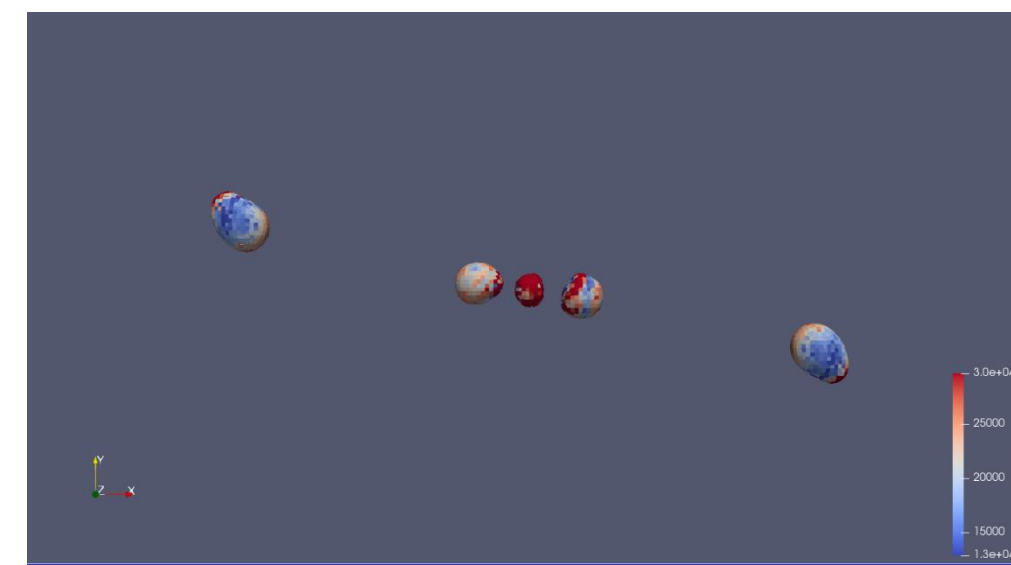
Can a database of ligament breakups be used to predict how droplets will be formed?

 $t = 0$ 

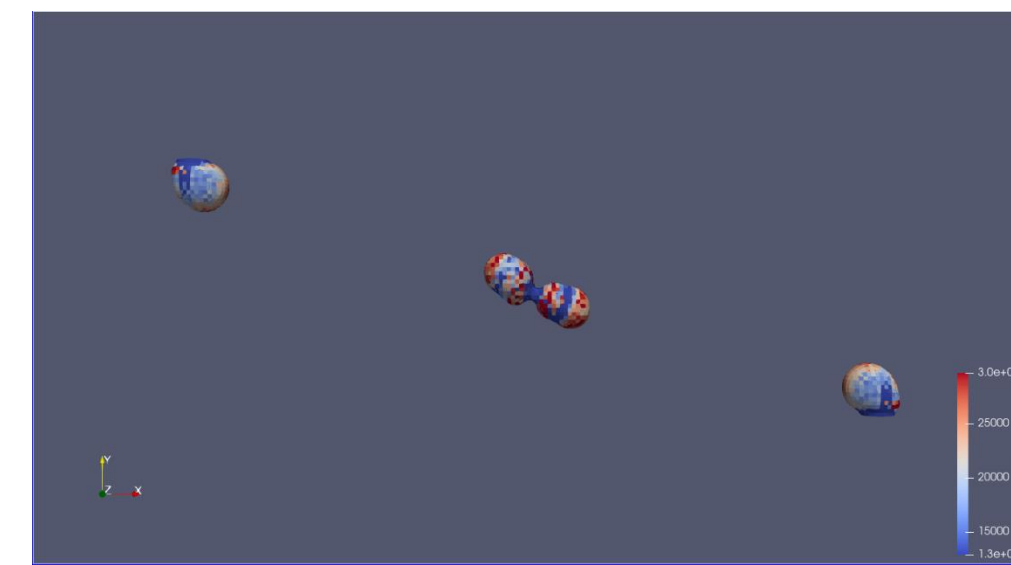
t = 5.6 E-4



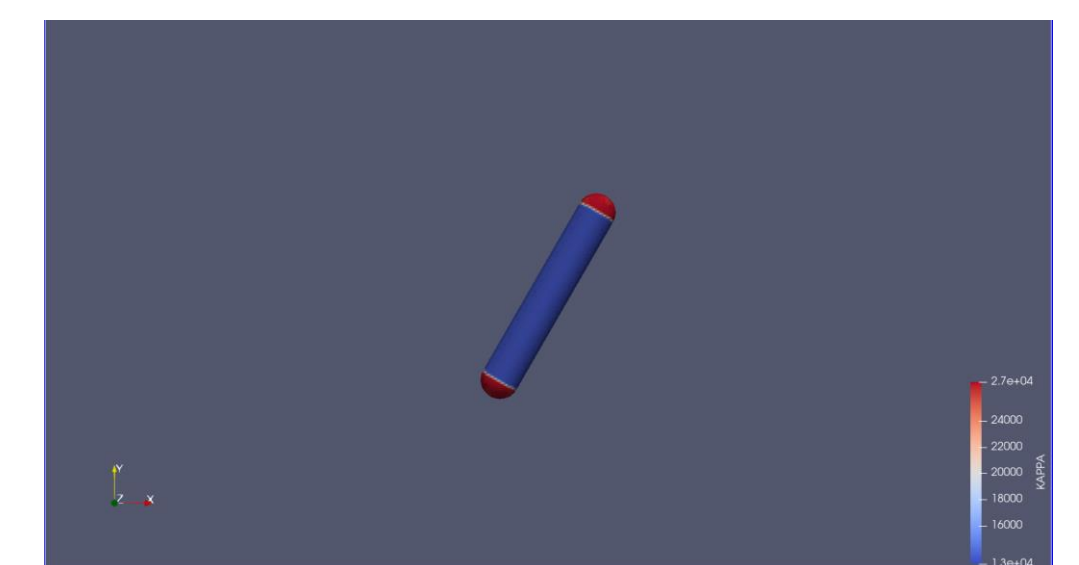
t = 1.1 E-3



t = 1.28 E-3



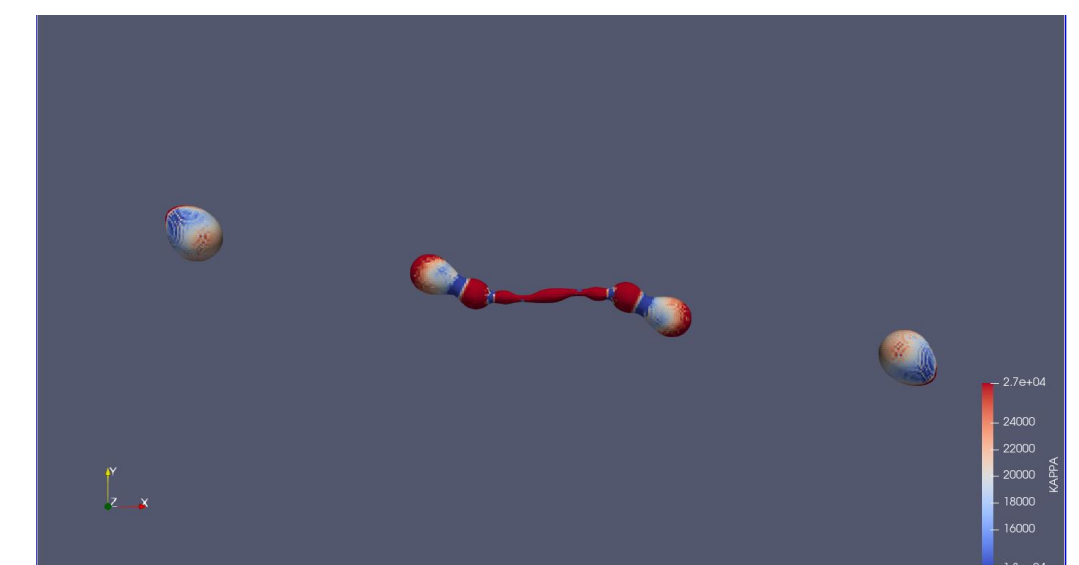
New Angle

$$t = 0$$


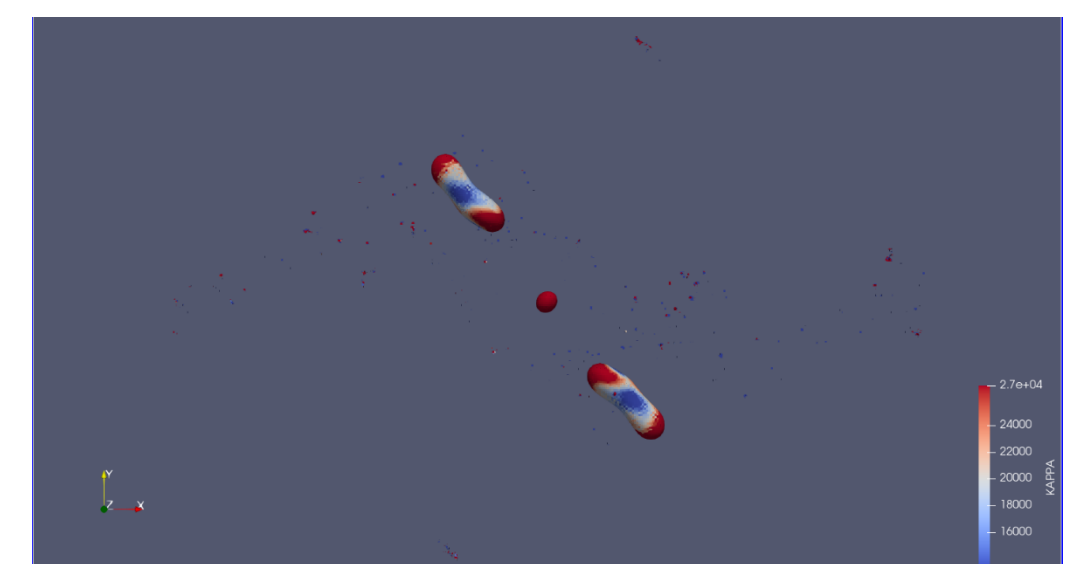
t = 5.6 E-4



t = 1.01 E-3



t = 1.73 E-3



Course Mesh

Medium Mesh

Research Methods

- Run multiphase CFD simulations
- Verify accurate resolution by running finer resolutions until there is little variation
- Once correct resolution is found, different orientations and diameters are simulated to study their breakup

Obstacles faced

- A series of bugs were encountered when trying to run the fine mesh
- Data was stored in google drive and due to the immense size of the simulation it made it impossible at this to pull the data for presentation

Next Steps

- Run simulations at different orientations and study the resulting breakup
- Run simulations at varying diameters and see which parameter has a greater impact
- Create a machine learning algorithm to predict how a ligament breaks up based on the database from this research

Acknowledgments

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