The contents of this folder contain the experimental work produced by David Tudor and James Paget during the 2024-2025 MSci project “Avoiding the Abraham-Minkowski controversy in light driven deformation”, later retitled as “Applying a bead and spring framework to light-driven deformation ”, supervised by Dr. Simon Hanna.

ADDA programs:

* Utilises open source software “ADDA”, available at <https://github.com/adda-team/adda>.
* A simple dynamics program using Amsterdam Discrete Dipole Approximation (ADDA) created in the first weeks of the project.

Custom ADDA:

* Modifications to the open source software ADDA, where an additional beam type ‘laguerre’ was implemented, which generates a Laguerre-Gaussian beam.
* No other additions were added and owned by their original contributors.

OTT programs:

* Utilises open source software “Optical Tweezer Toolbox”, available at <https://github.com/ilent2/ott/blob/master/docs/index.rst>.
* This was used to explore the dynamics and optical forces using the T-matrix method but was unsuccessful. Many of the programs seek to get a particle to orbit in a Laguerre-Gaussian beam.

SH\_DDA:

* Main DDA and dynamics simulation program used to collect experimental data. This was originally built and provided by Simon Hanna, but modified for usage in this project.
* The majority of the project’s experiments were run using SimulationVaryRun.py
* This program can be run using the command:   
    
  ***python SimulationVaryRun <RUN\_TYPE>***where ***<RUN\_TYPE>*** is a string matching one of cases towards the end of the program (beginning at line 3517).