

Novel Experiments for the Investigation of Non-Ideal Compressible Fluid Dynamics The ORCHID and First Results of Optical Measurements

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Propositions

accompanying the dissertation

NOVEL EXPERIMENTS FOR THE INVESTIGATION OF NON-IDEAL COMPRESSIBLE FLUID DYNAMICS THE ORCHID AND FIRST RESULTS OF OPTICAL MEASUREMENTS

by

Adam Joseph HEAD

- The development of a general validation methodology for use in assessing the credibility of software always involves heuristics and the opinions of the experimenters.
 - This proposition pertains to this dissertation.
- 2. Flow field experiments are a means to evaluate the suitability of thermodynamic models to close the conservation equations.
 - This proposition pertains to this dissertation.
- The problem of scientific articles pollution could be rectified by eliminating all the articles involving simulations which were not validated against a wellcharacterized experiment.
- 4. One should think carefully before speaking and acting but without waiting too long, for the *well-informed* boastful ones know when to act.
- 5. Happiness can neither be created nor destroyed but it could be better redistributed by means of knowledge, luck and dollar bills.
- 6. The mentality associated with the dogma of not publishing failed research attempts dooms future generations of scientists into making recurring mistakes.
- Commercially funded PhD research significantly limit the originality of academic work.
- 8. Chromatic confocal imaging is a viable technique for the accurate measurement of the refractive index of organic vapors and thus can be used to derive point-wise density values in high speed vapor flows [1, 2].

These propositions are regarded as opposable and defendable, and have been approved as such by the promotor prof. dr. P. Colonna.

- [1] BESSERER, G. J. & ROBINSON, D. B. 1973 Refractive indexes of ethane, carbon dioxide, and isobutane. J. Chem. Eng. Data 18 (2), 137–140.
- [2] PAXTON, D. 2016 Experimental characterization of condensation behavior for metastable carbon dioxide. Master's thesis, MIT.