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The Entropy Paradox in the Chapman-Jouguet Theory of Detonation[1] DAVID DUNLAP, Department of Physics and Astronomy, University of New Mexico, OSMAR AGUIRRE, Department of Mechanical Engineering, University of New Mexico — The Chapman-Jouguet theory of detonation waves (circa 1905) predicts propagation speeds in gaseous systems to within 2% of experimental values in most cases. In spite of this success, the theory was criticized early on by investigators who claimed that the accuracy of the CJ solution was just a lucky accident. The solution represents an entropy minimum of the final state, which is thermodynamically unstable. We show, however, that the original entropy-minimum argument was made erroneously, thus resolving a 100-year-old paradox.

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