

## **Galileo's Refutation of the Speed-Distance Law of Fall Rehabilitated**

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Galileo's Refutation of the Speed-Distance Law of Fall Rehabilitated Galileo's refutation of the speed-distance law of fall in his *Two New Sciences* is routinely dismissed as a moment of confused argumentation. We urge that Galileo's argument correctly identified why the speed-distance law is untenable, failing only in its very last step. Using an ingenious combination of scaling and self-similarity arguments, Galileo found correctly that bodies, falling from rest according to this law, fall all distances in equal times. What he failed to recognize in the last step is that this time is infinite, the result of an exponential dependence of distance on time. Instead, Galileo conflated it with the other motion that satisfies this 'equal time' property, instantaneous motion.