ABSTRAK

Hukum Gerak Benda Aristoteles Berdasarkan Perspektif Fisika Newtonian

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Buah pikir Aristoteles memberi pengaruh besar terhadap sains. Ia tak hanya mengemukakan pertanyaan terkait ilmu alam secara fundamental melainkan juga menjawab permasalahan alam lebih empiris dari pada gurunya, Plato. Salah satunya dapat dilihat pada hasil pengamatan Aristoteles mengenai gerak benda di Bumi. Beberapa hukumnya yang dikenal sebagai gerak natural dan terpaksa akan ditelaah dan dirumuskan melalui sudut pandang fisika Newtonian dengan bantuan hukum Archimedes dan hambatan medium. Selain itu, kelemahan hukum gerak benda Aristoteles juga dibahas untuk mengetahui batas domain fisika Aristoteles dalam domain Newton. Ternyata, beberapa pengamatan yang diperoleh Aristoteles pada gerak benda di sekitarnya dikatakan benar jika gerak benda di Bumi dianggap seperti di dalam fluida dengan kelemahan utamanya adalah tidak mengetahui adanya percepatan dalam gerak benda yang disebabkan oleh minimnya pengamatan secara kuantitatif.

Kata kunci: Aristoteles, Bumi, fluida, gerak benda, dan Newton.

ABSTRACT

Aristotle's Law of Motion Based on The Perspective of Newtonian Physics

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Aristotle's ideas had a significant influence on science. He raised not only the natural sciences question fundamentally but also the nature problems answer more empirically than his teacher, Plato. One of them can be noticeable in the results of Aristotle's observations of the motion of objects on Earth. Some of his laws about natural and forced motion will be studied and formulated using the point of view of Newtonian physics with the help of Archimedes' law and medium resistance. In addition, the weaknesses of Aristotle's laws of motion will be investigated to determine the limitations of Aristotle's physics in Newton's domain. It reveals that the observations obtained by Aristotle on the object's motion around him were said to be correct with the assumption that the motion of objects on Earth is like in a fluid. However, he could not recognize the presence of acceleration in the object's motion due to the lack of quantitative observations.

Keywords **:** Aristotle, Earth, fluid, Newton, and object's motion