If one defines the magnitude of a property to be momentum multiplied by radius then one cannot reasonably expect said magnitude to be conserved when the radius changes.

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Abstract:

A simple mistaken assumption has led to the perpetration of a fallacy in science education. The application of the law of conservation of angular momentum to any situation in which the radius changes is flawed.

I. Introduction

Whilst working on a project which was not producing the results that my calculations predicted, I stumbled upon this.

II. Proof

Angular momentum is defined as the vector product of radius and momentum so the magnitude will change when the magnitude of the radius changes by definition. Current application and demonstration of the law of conservation of angular momentum contends that when the radius is reduced, the magnitude of the momentum must increase in order to conserve the angular momentum. This thinking is flawed and what is more is that this contention defeats the law of conservation of momentum. This issue has been overlooked by science for many years when applying conservation of angular momentum. It cannot and does not apply when the radius changes.

III. Conclusion

The application of the law of conservation of angular momentum to any situation in which the radius changes is flawed.

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