

Re: Double Your Momentum, Reflection

Source: <http://sci.tech-archive.net/Archive/sci.physics/2005-12/msg00609.html>

- *From:* "PD" <TheDraperFamily@xxxxxxxxxx>
 - *Date:* 7 Dec 2005 14:32:57 -0800
-

W. Watson wrote:

> IsaacKuo wrote:

>

>> Charles wrote:

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>>> On 7 Dec 2005 12:26:24 -0800, "PD" <TheDraperFamily@xxxxxxxxxx> wrote:

>>

>>

>>>> Initially, ball has momentum +P and wall has momentum 0.

>>>> Finally, ball has momentum -P and wall has momentum +2P.

>>>> Total momentum is conserved (+P in both cases).

>>

>>

>>> I managed to confuse myself with your explanation.

>>

>>

>>> Imagine two walls. Let's put them in orbit, so there is no coupling

>>> between them. Elastic ball and walls. so little loss.

>>

>>

>>> the ball hits one wall and results in the momentum as you state. It

>>> bounces to the second wall, regains its +p momentum and imparts -2P

>>> momentum to the second wall. Then it bounces to the first wall again,

>>> which still has its +2P momentum, now it gets 2 more, so it results in

>>> +4P? This can progress for a long time?

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>> Yes, in principle it can keep going until the walls are moving outward,

>> each with half of the kinetic energy the ball originally had. As the

>> walls move apart faster and faster, the ball loses more and more

>> velocity with each bounce.

>>

>> Isaac Kuo

>>

> That's certainly interesting.

>

> I guess no $mv_1 + mv_2 = \text{const}$ is going to work here (original query).

>

Re: Double Your Momentum, Reflection

Sure it does. You just have to remember that momentum is a **vector** quantity.

A momentum of mv to the left plus a momentum of mv to the right is a total momentum of **zero**, not $2mv$.

PD

- **References:**

- ◆ ***Double Your Momentum, Reflection***
 - ◇ *From: W. Watson*
- ◆ ***Re: Double Your Momentum, Reflection***
 - ◇ *From: PD*
- ◆ ***Re: Double Your Momentum, Reflection***
 - ◇ *From: Charles*
- ◆ ***Re: Double Your Momentum, Reflection***
 - ◇ *From: IsaacKuo*
- ◆ ***Re: Double Your Momentum, Reflection***
 - ◇ *From: W. Watson*

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