

**From:** Huan-Ping Wu {e-mail redacted}  
**Sent:** Thursday, December 08, 2016 9:30 AM  
**To:** '2014\_interim\_guidance@uspto.gov'  
**Subject:** Question on characterizing mathematical relationship

Dear Sir,

I was studying the 2014 Interim Guidance on Subject Matter Eligibility. On page 32 of the training presentation (<https://www.uspto.gov/sites/default/files/documents/training%20-%202014%20interim%20guidance.pdf>), the first bullet point of second column states "The claim operates using certain mathematical relationship, e.g., velocity is a relationship between the position of an object with respect to time."

Characterizing velocity, which is a term having a dimension of [distance/time], as a mathematical relationship would seemingly open up many other terms with similarity for scrutiny. For instance, electrical current has the dimension of [charge/time]. In physics, many of terms may be considered as either parameters of quantity, or intensity. For example, time, distance, weight, electrical charge, or population are parameters of quantity that has the physical dimension of [---] while pressure, velocity, concentration, slope, electrical current, or population density are parameters of intensity that has the physical dimension of [---]/[---], or something per something. Extending from these definitions, it would seem that velocity is only a parameter of intensity in physics, and not necessary a mathematical relationship. Otherwise, the electrical current, as many scientists and engineers may use it for defining and detecting signals, may also be characterized as mathematical relationship.

Please advise me on my above notes.

Respectfully,

Ping Wu

Huan-Ping Wu, Ph.D.  
Principal Staff Scientist  
Sensor Technology



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## Streamlined Example 2

2. A robotic arm assembly comprising:

a robotic arm having an end effector that is capable of movement along a predetermined motion path,

a sensor that obtains movement information about the end effector, and

a control system that uses the movement information from the sensor to adjust the velocity of the end effector in order to achieve a smooth motion along the predetermined motion path.

- The claim operates using certain mathematical relationships, *e.g.*, velocity is a relationship between the position of an object with respect to time.
- However, the claim clearly does not seek to tie up these mathematical relationships. For example, others are clearly free to use velocity in other applications such as in a radar gun.

**The claim qualifies as eligible subject matter without a full analysis.**