Concept problem – 1D motion model

- Situation: A car is approaching a policeman who measures his velocity by a radar? It may be assumed that the motion of the vehicle is characterized by constant deacceleration(breaking).

1. Which parameters should be part of the state vector to model its motion?

2. It is useful to include the (absolute) position of the vehicle in the state vector? (In other words: Can the position -- despite its change -- be determined only from velocity observations?)

3. Write down F and H matrices

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4. Suppose that the velocity obs. is subject a a constant systematic error. Can the constant error be determined only from velocity obs?