A particle described by a wavepacket has its position measured. Which of the following is generally true?

- A) The momentum of the particle will increase
- B) The momentum wavefunction will be unchanged
- C) The momentum wavefunction will become more spread out
- D) The momentum wavefunction will become more peaked
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Measuring the position will collapse the wavefunction to a very narrow peak. The corresponding momentum wavefunction will be very widely spread. An electron is measured to be at some position x. Immediately afterwards, the electron's momentum is measured, and immediately after that, its position is measured again. The second measurement of position

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B) Will generally be different than the first one.

C) Will depend on what you get for the momentum

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The position measurement will destroy the wavefunction and collapse it to a momentum eigenstate. As a result, the latter position measurement can give you just about anything.



The wavepacket above can be writen as a superposition of pure waves with amplitude A(p) as shown. Which amplitude









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ch amplitude (momentum wavefunction) will give the wavepacket on the left?

Shorter wavelength -> higher average momentum

wider packet -> more peaked momentum wavefunction A beam of electrons is sent through a small hole in a piece of foil. The places where the electrons hit on a distant screen are recorded. If we make the hole smaller, the region where the electrons are hitting the screen will be



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momentum, so the pattern will be bigger.