

# 01.

## Double Wells



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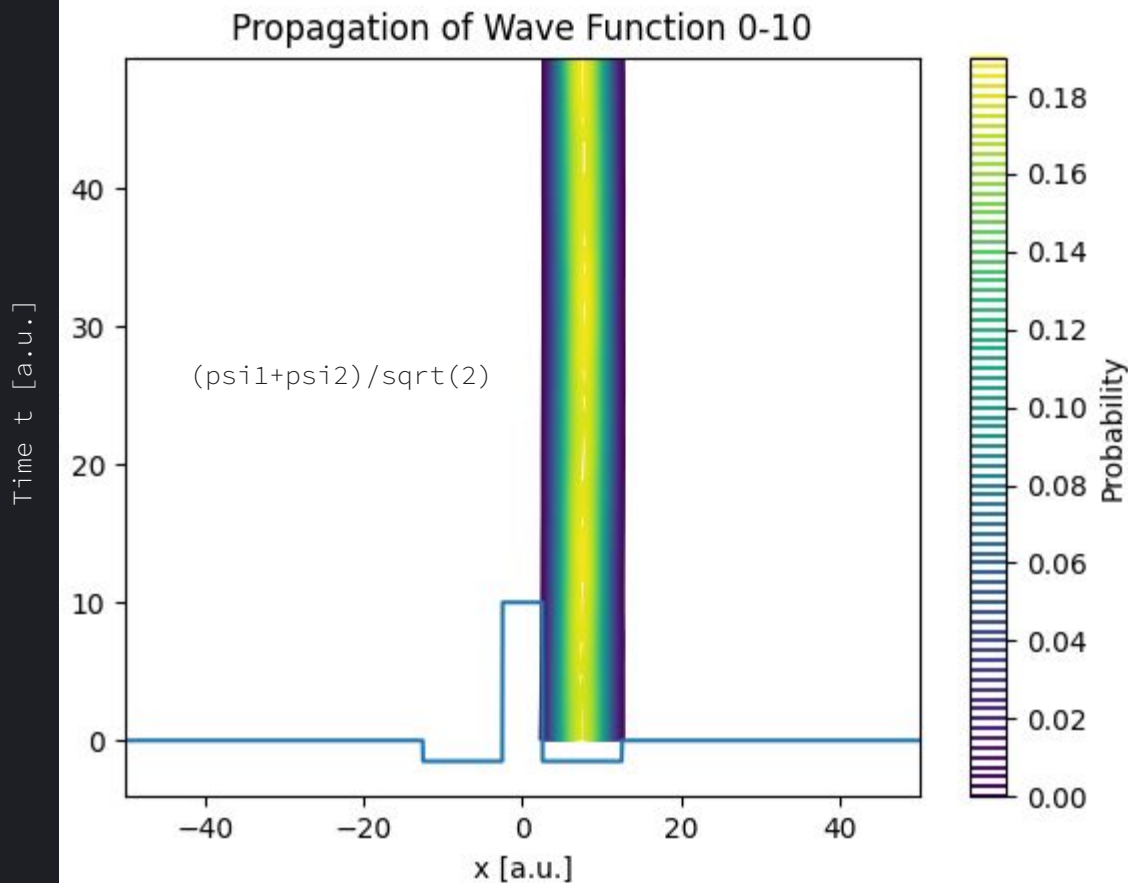
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Positive  
normal



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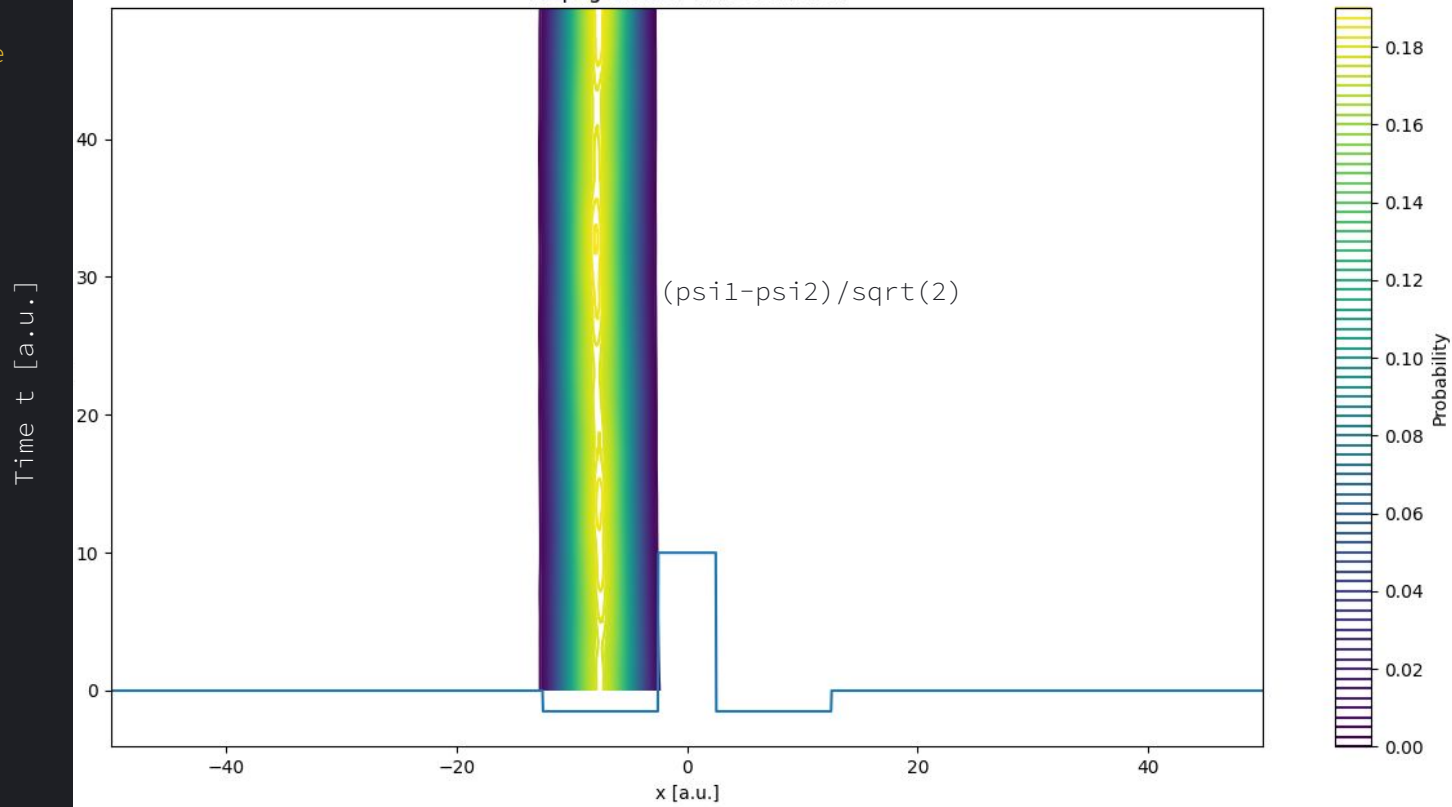
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negative

### Propagation of Wave Function



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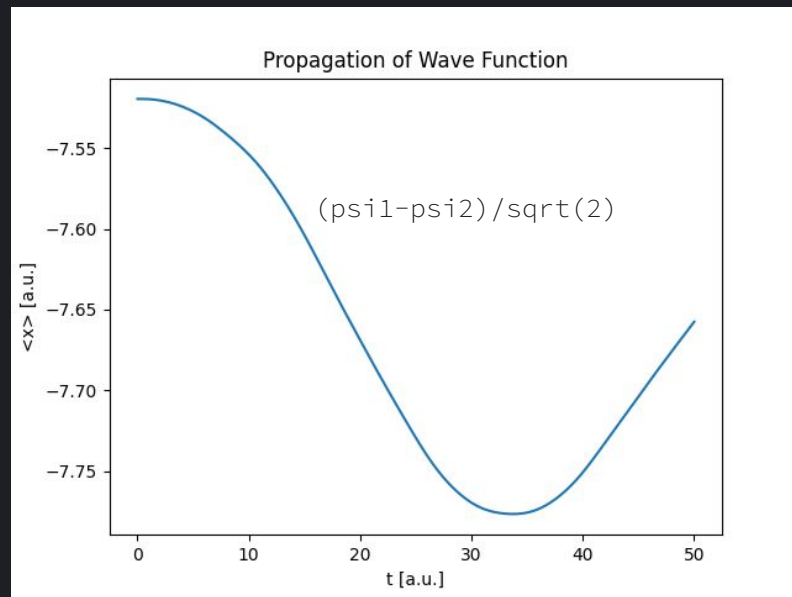
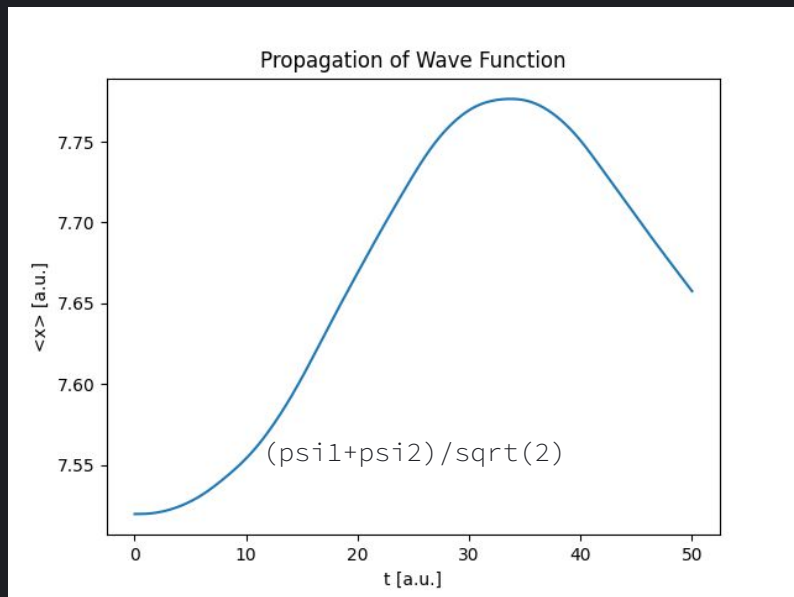
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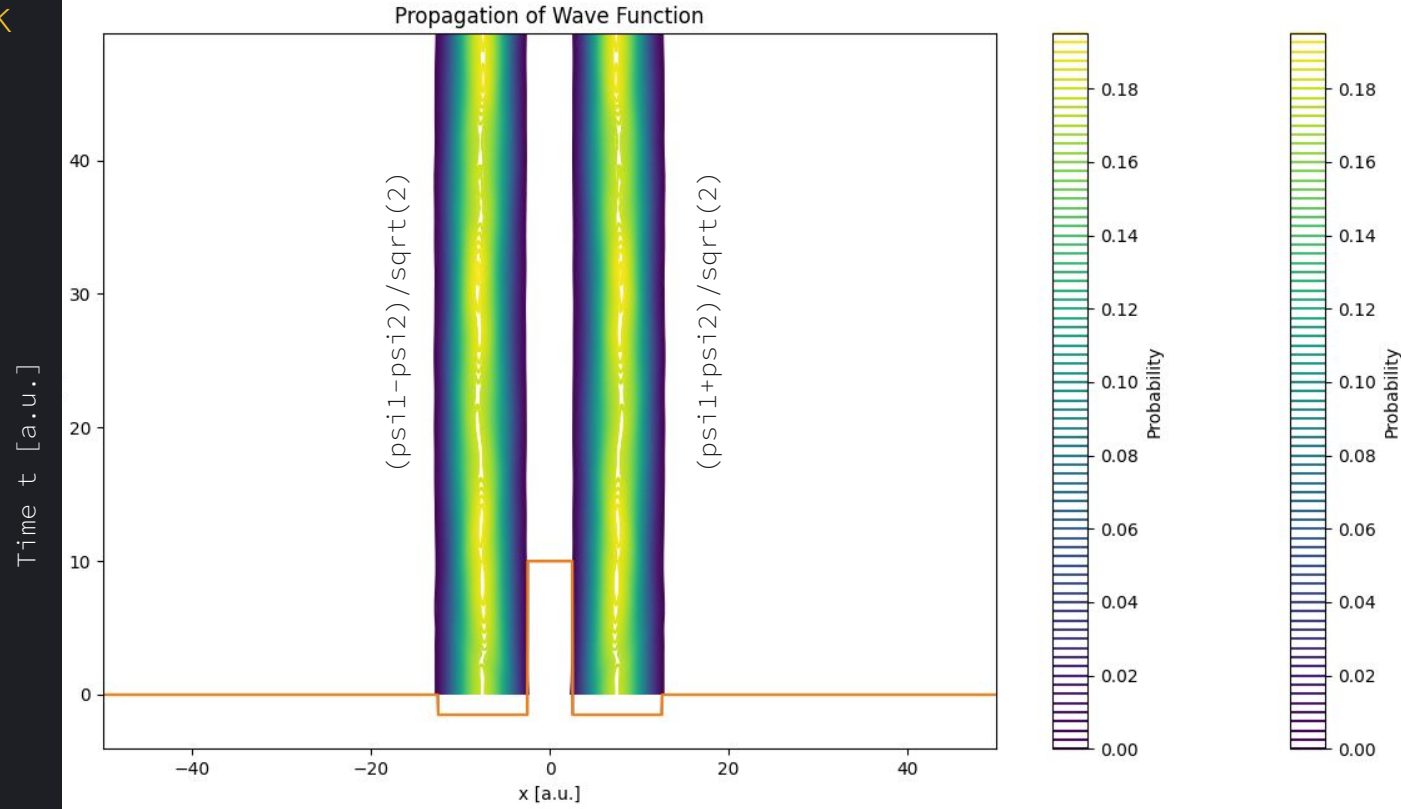
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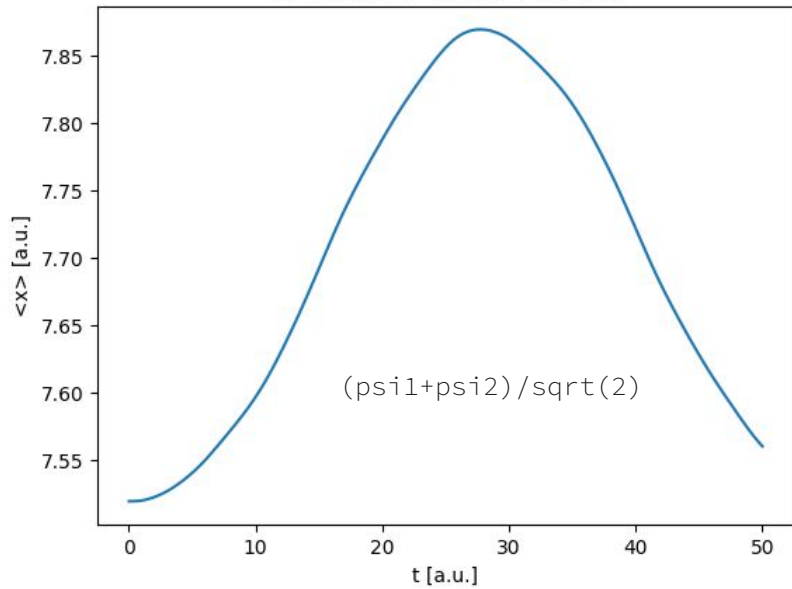
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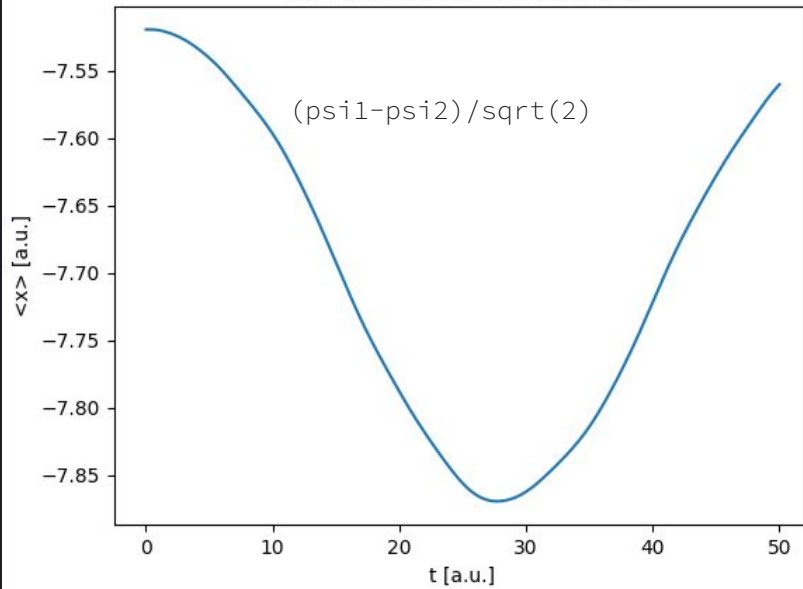
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Propagation of Wave Function



Propagation of Wave Function



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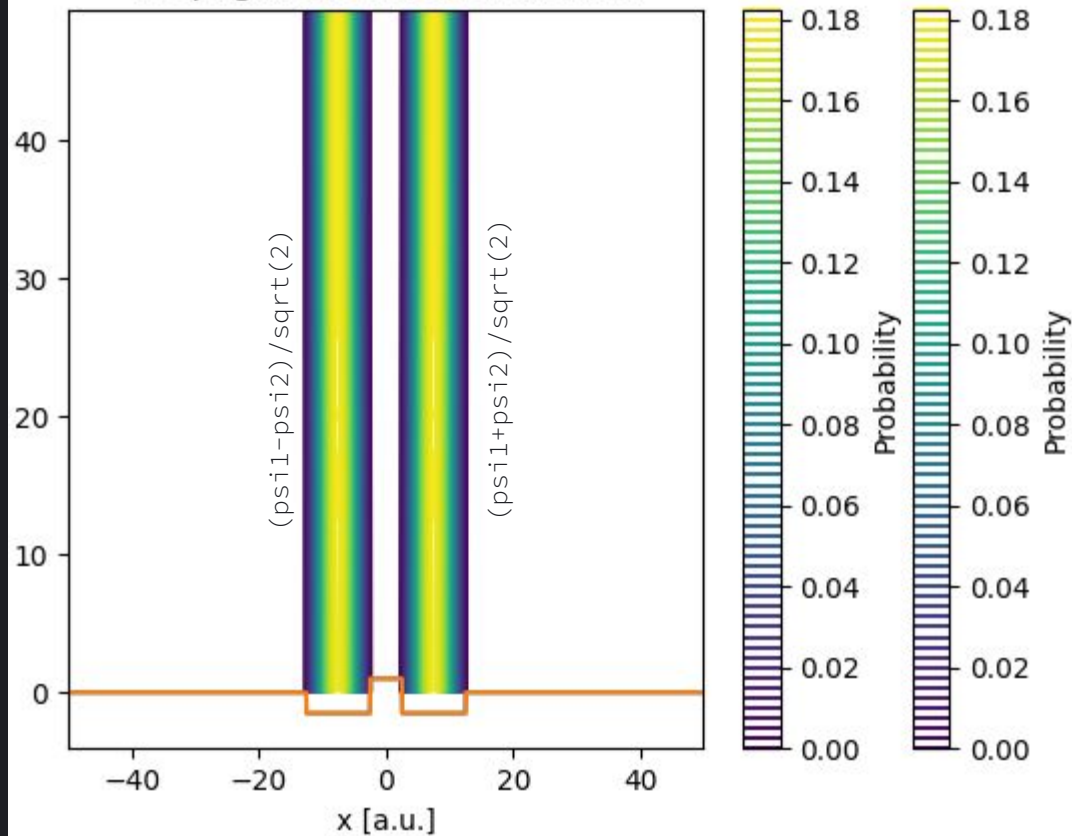
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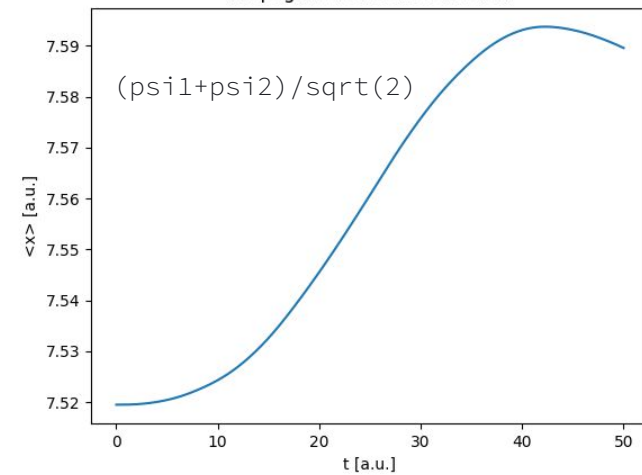


Time  $t$  [a.u.]

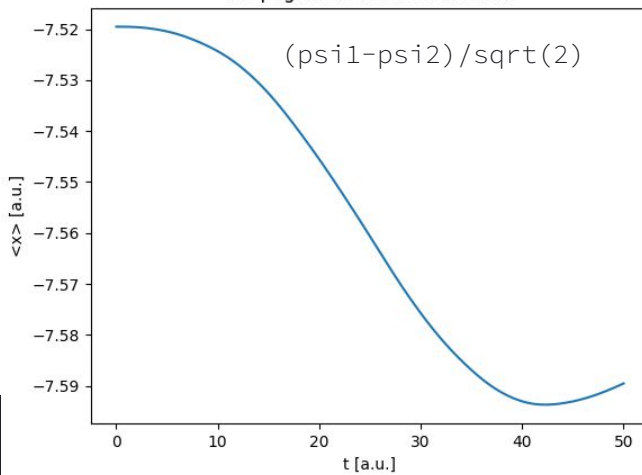
## Propagation of Wave Function

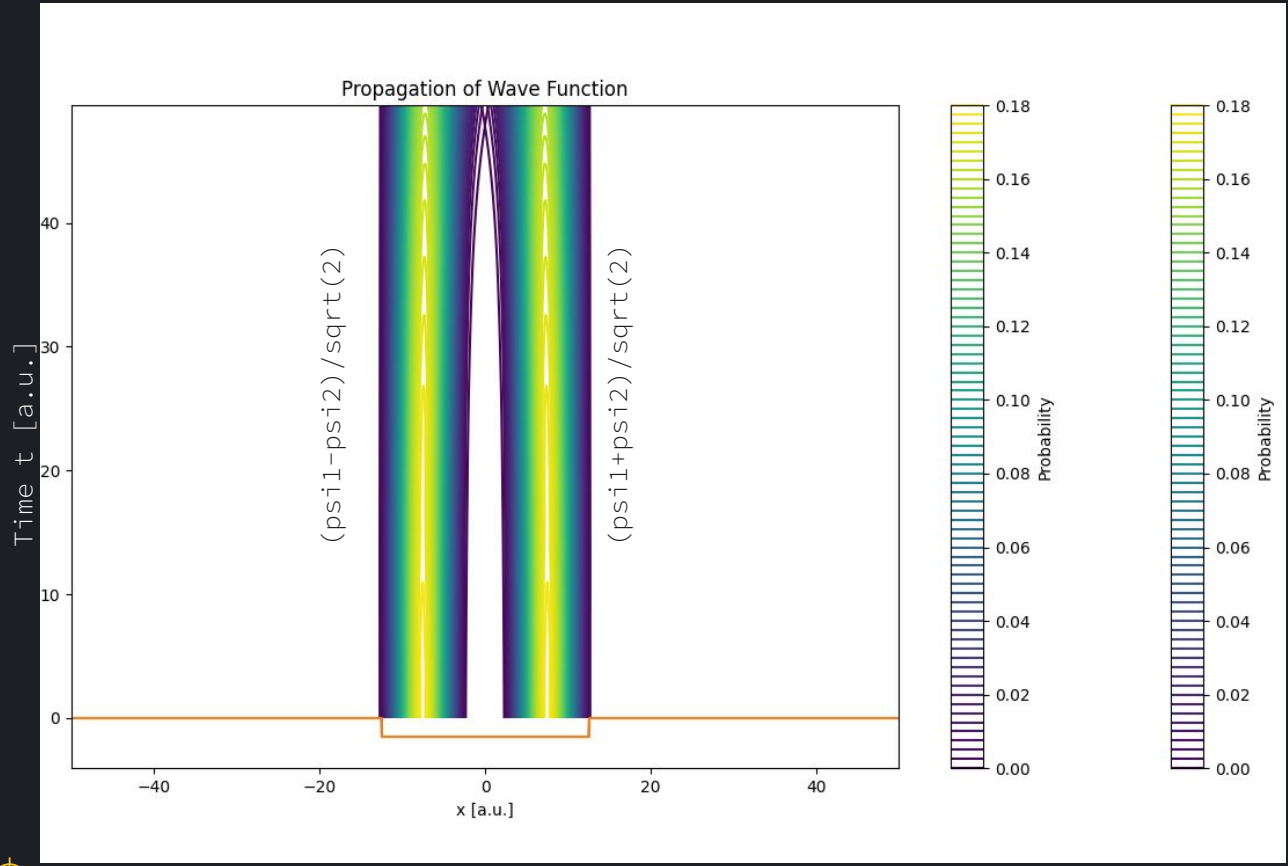


## Propagation of Wave Function



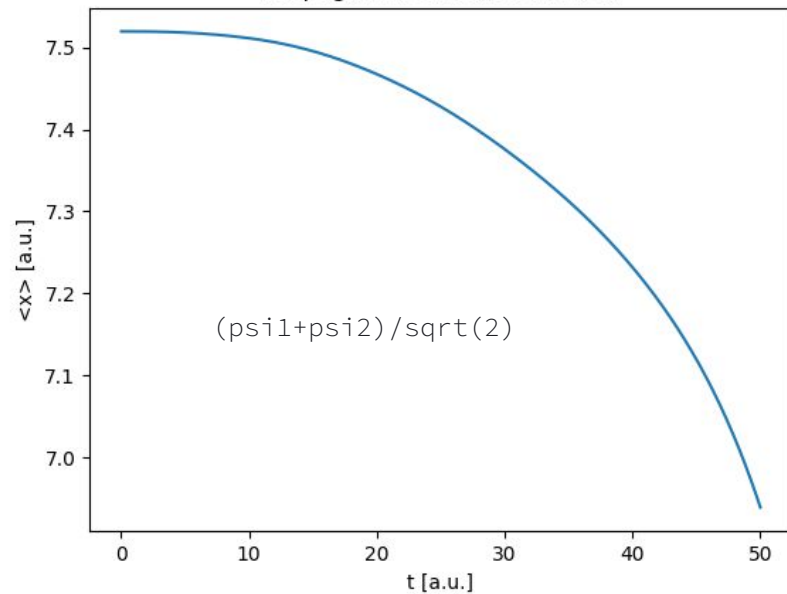
## Propagation of Wave Function



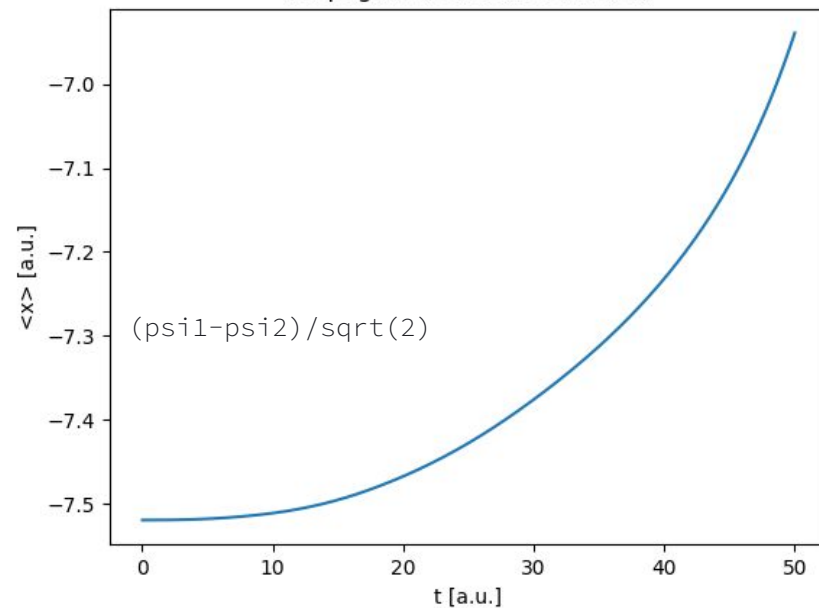




Propagation of Wave Function



Propagation of Wave Function



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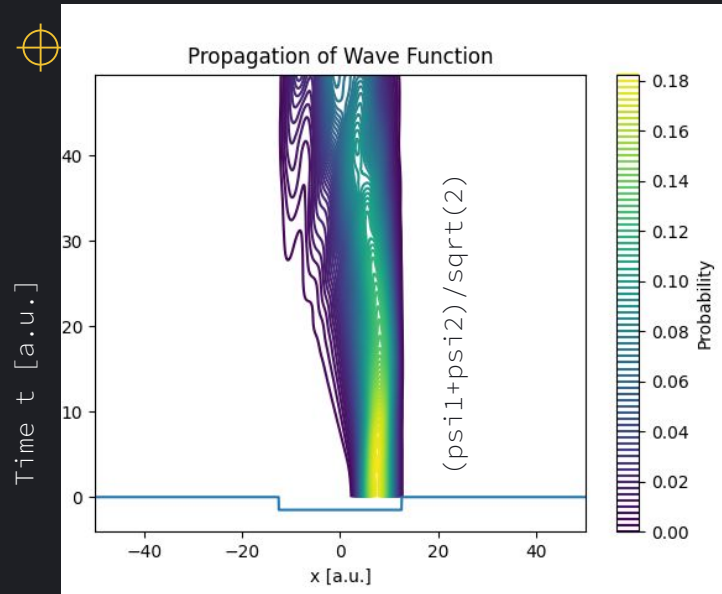
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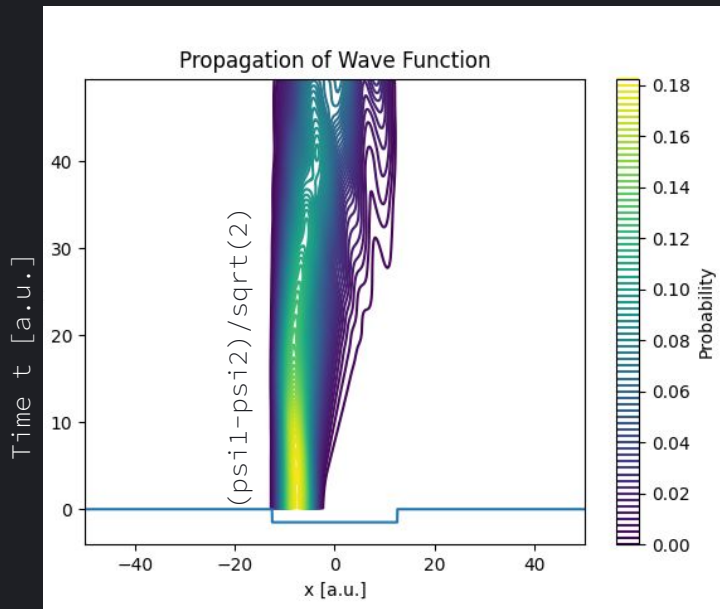
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quick



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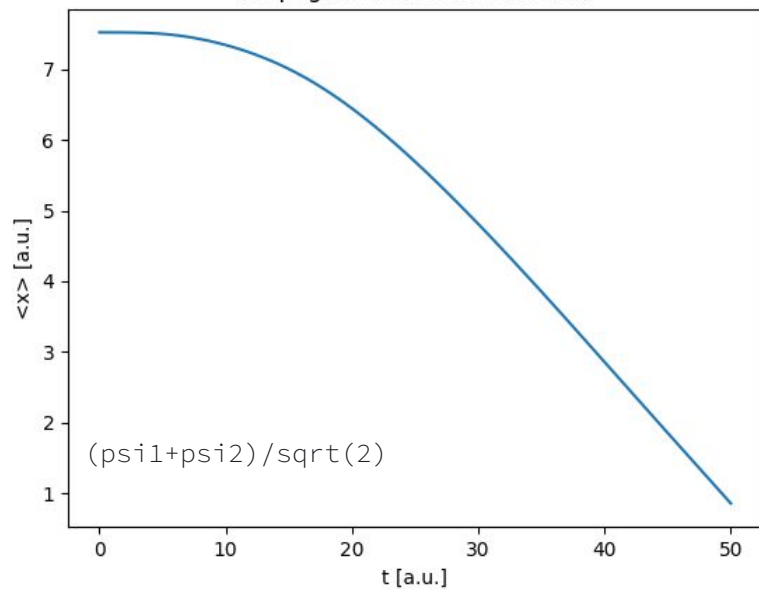
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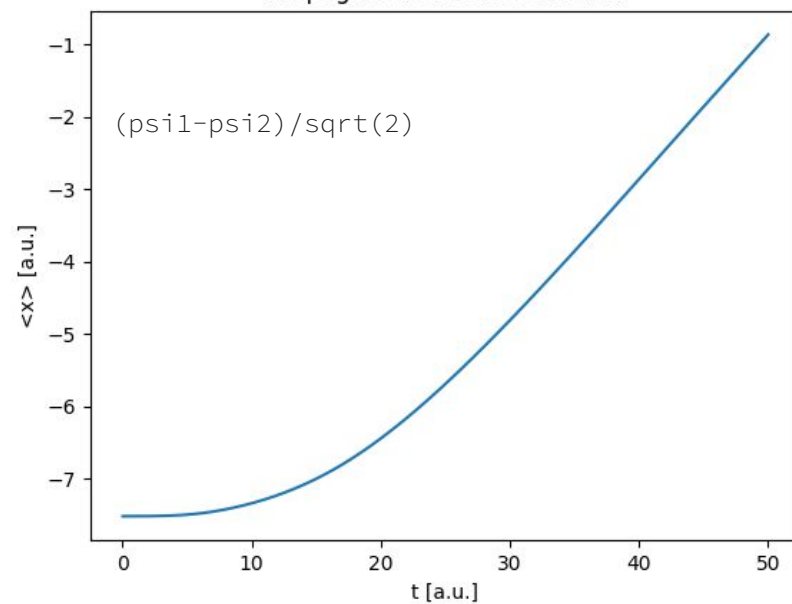
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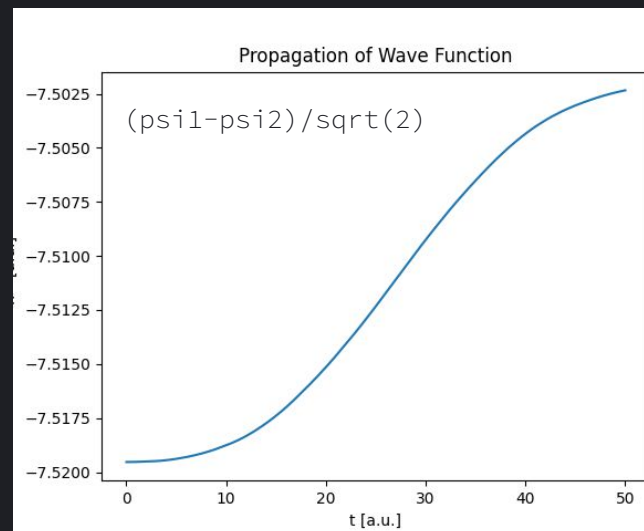
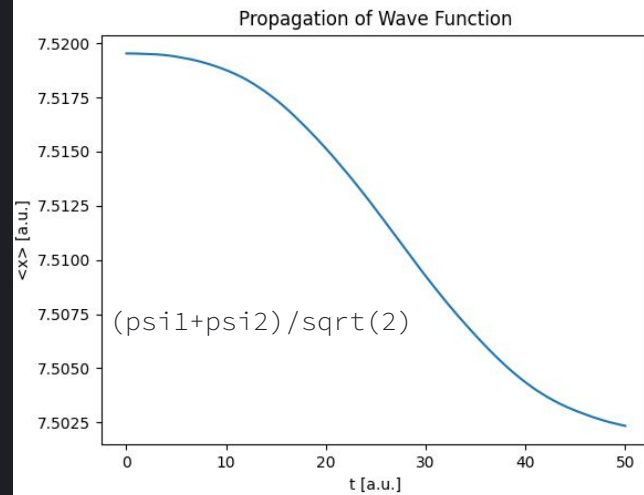
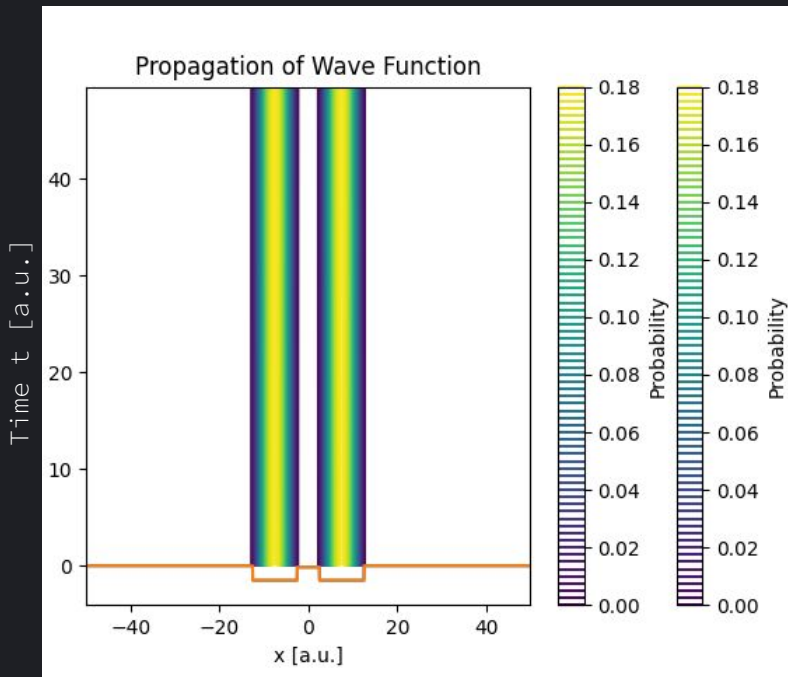
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Propagation of Wave Function



Propagation of Wave Function





01

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# Conclusion

When the barriers decrease quickly, the wave starts to tunnel through the second well. This could be seen when the barriers decrease slowly, but not very evident. Oppositely, the barriers increase quickly or slowly do not affect much the expected position through time.



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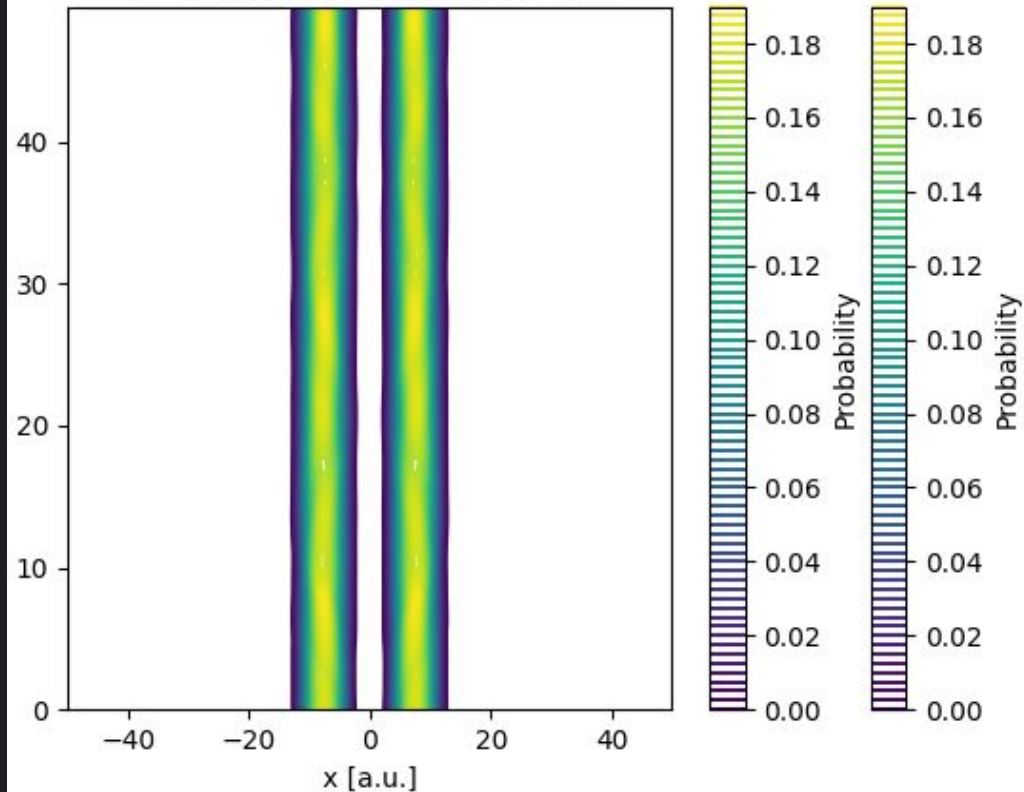
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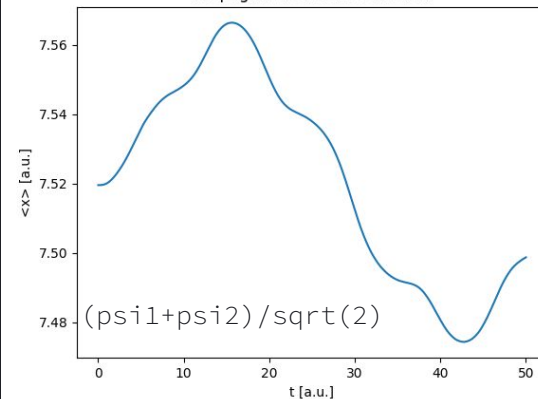
b).5 with turn off at 5

Time  $t$  [a.u.]

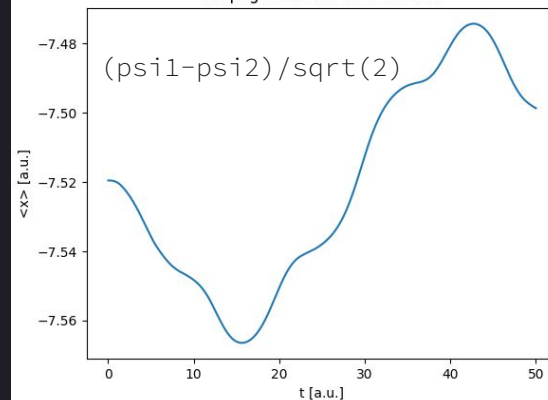
Propagation of Wave Function



Propagation of Wave Function



Propagation of Wave Function



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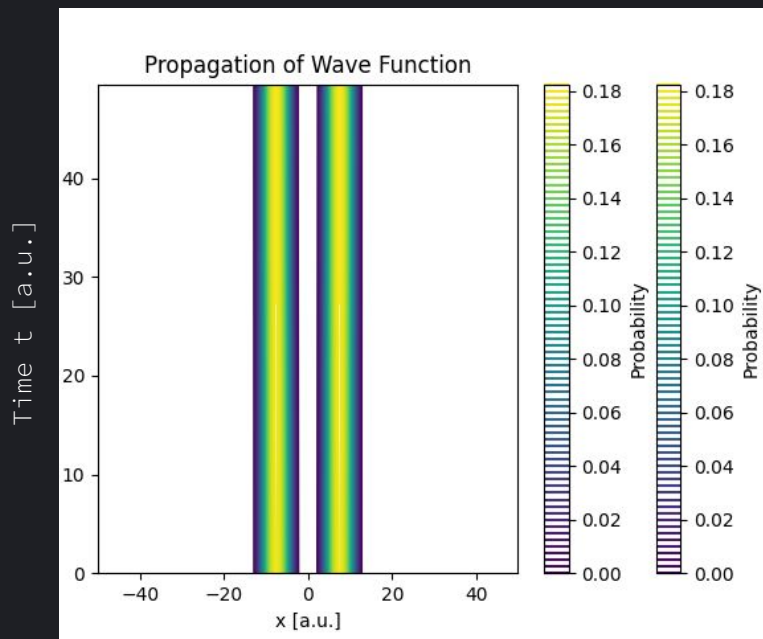
04

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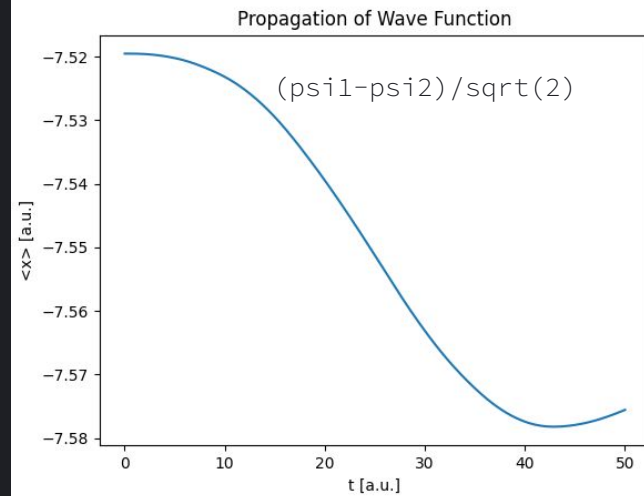
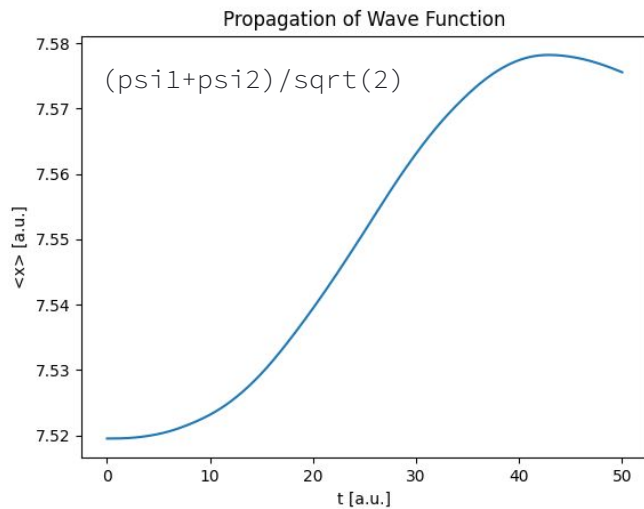


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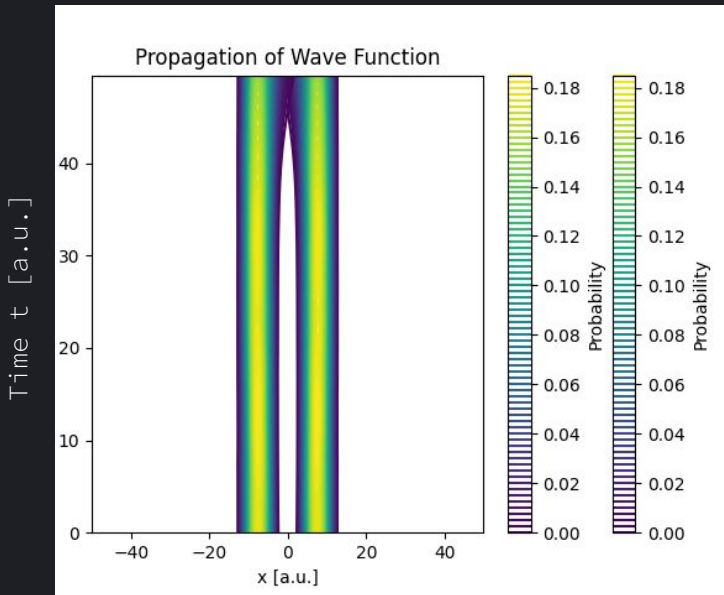
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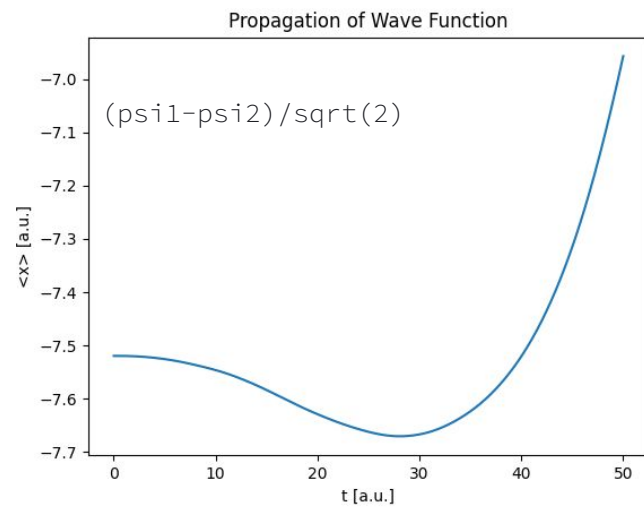
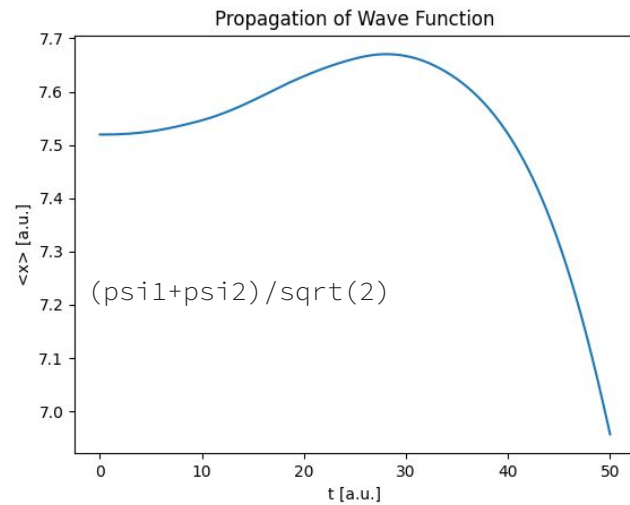




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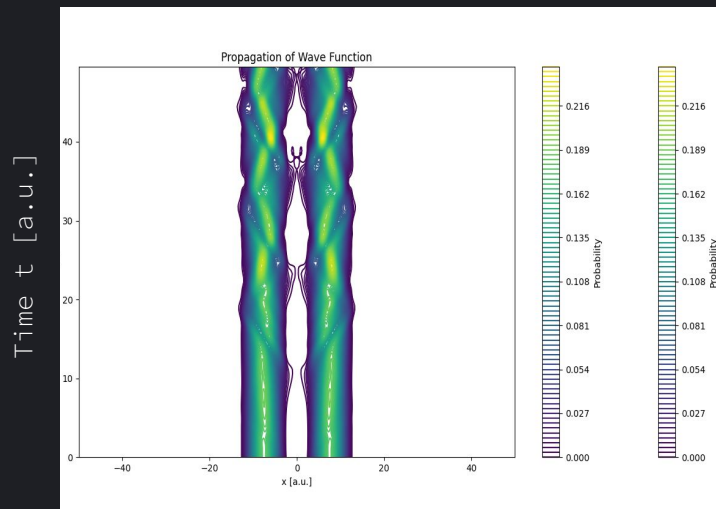


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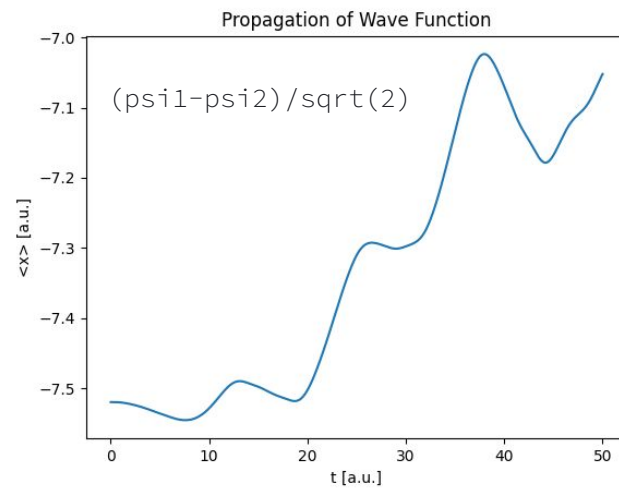
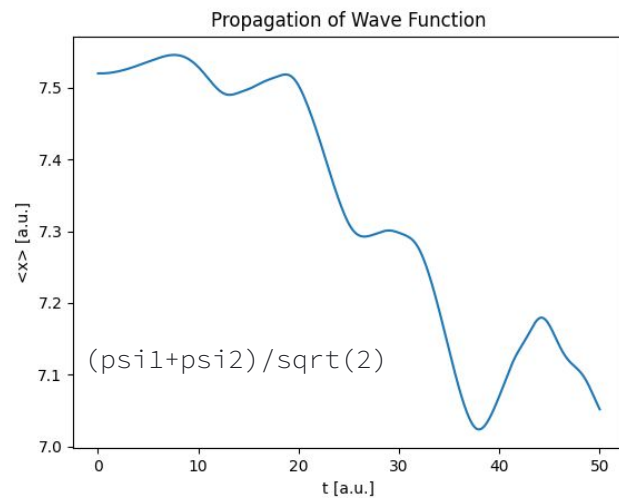




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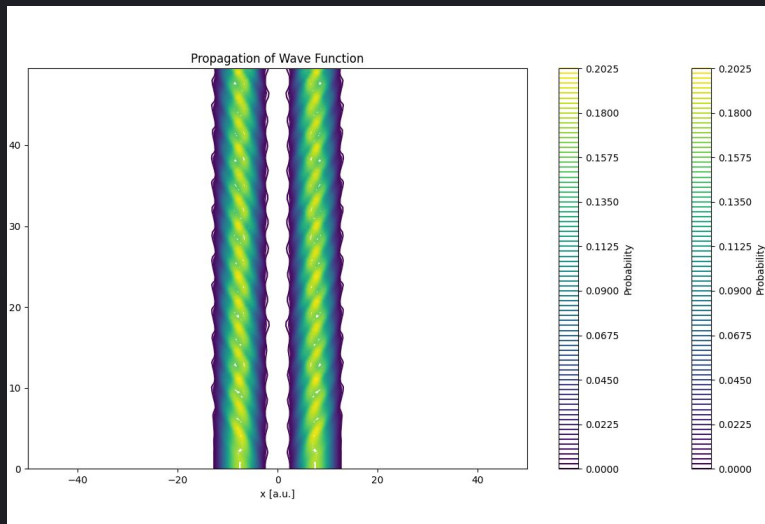
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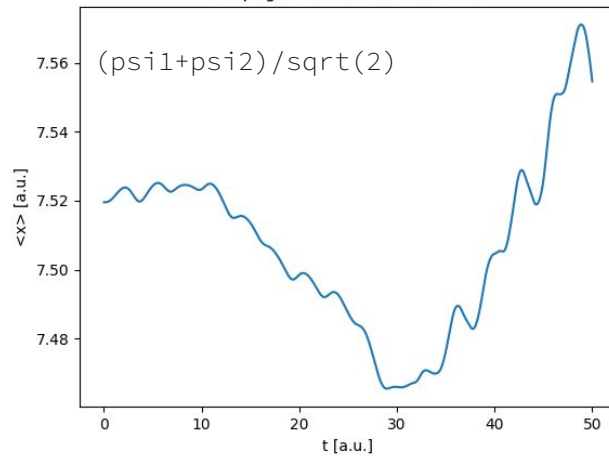
Time  $t$  [a.u.]



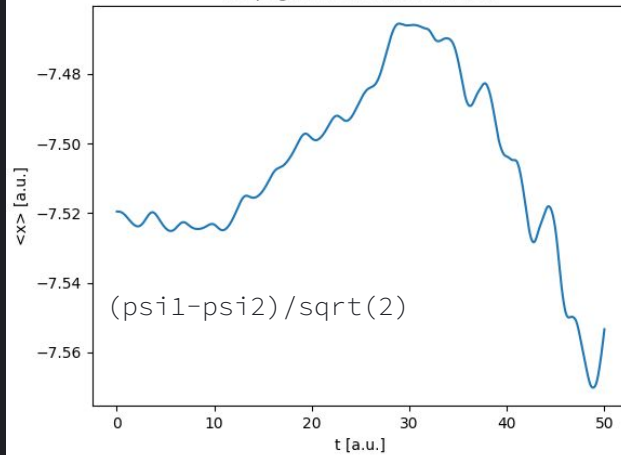
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Propagation of Wave Function



Propagation of Wave Function





# Conclusion

As we increase the Omega value, the oscillations of the expected values increase.



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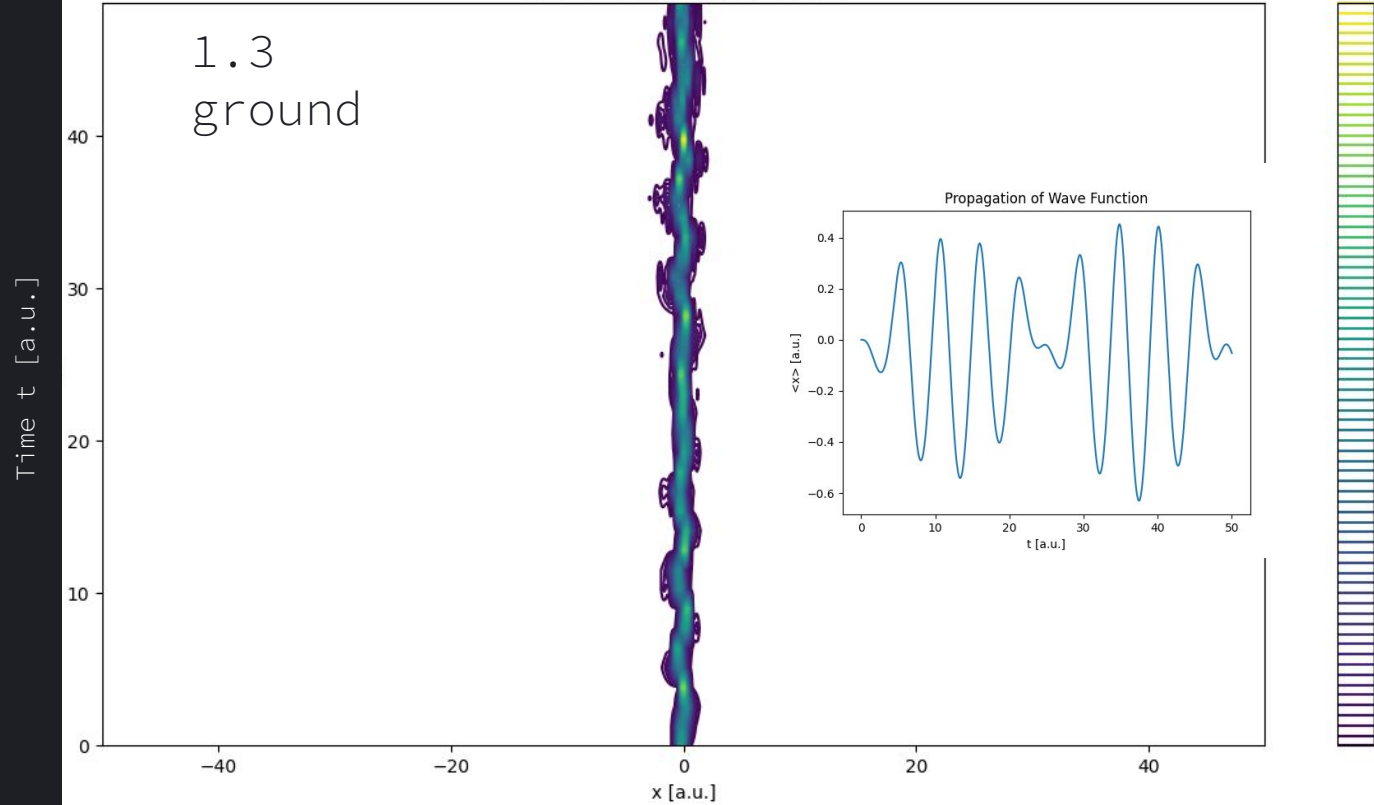
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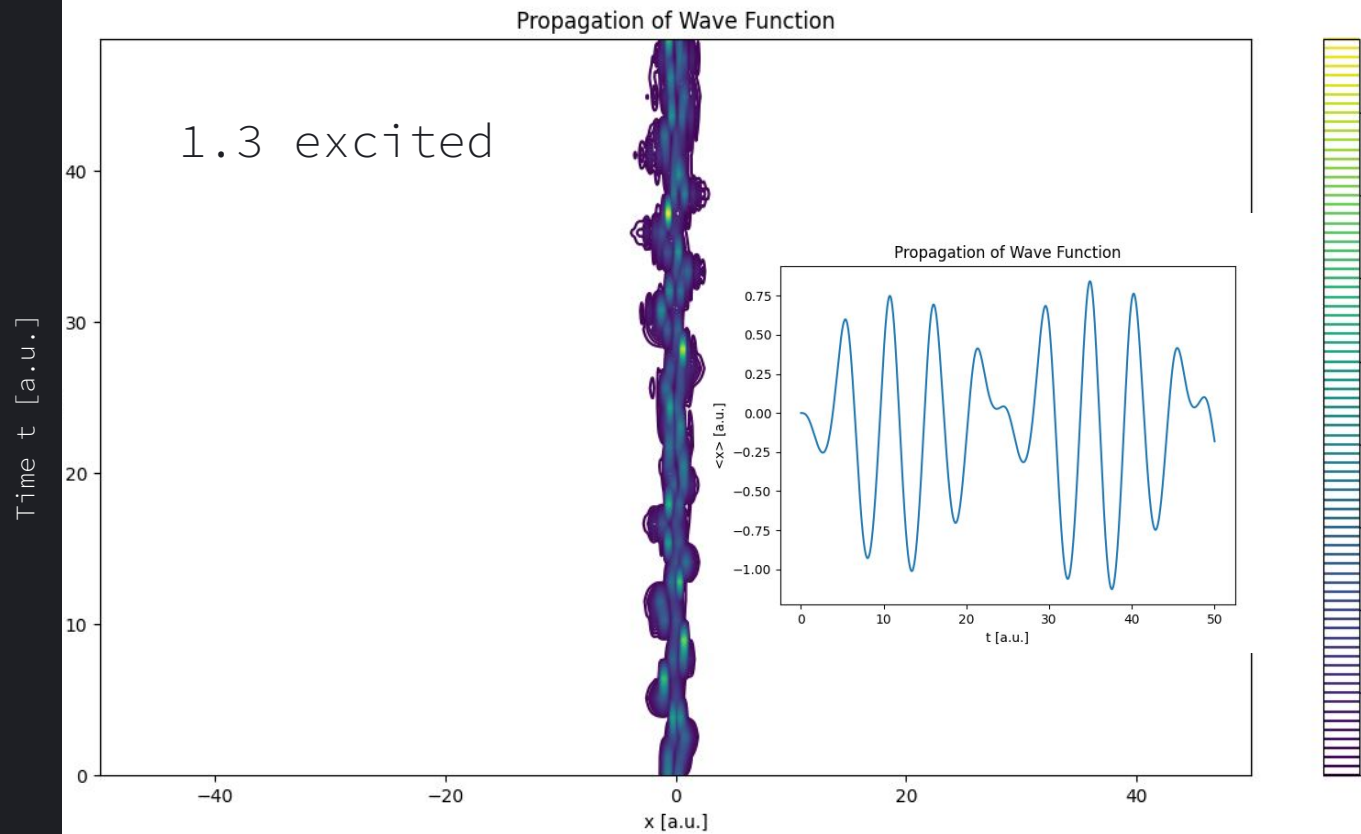
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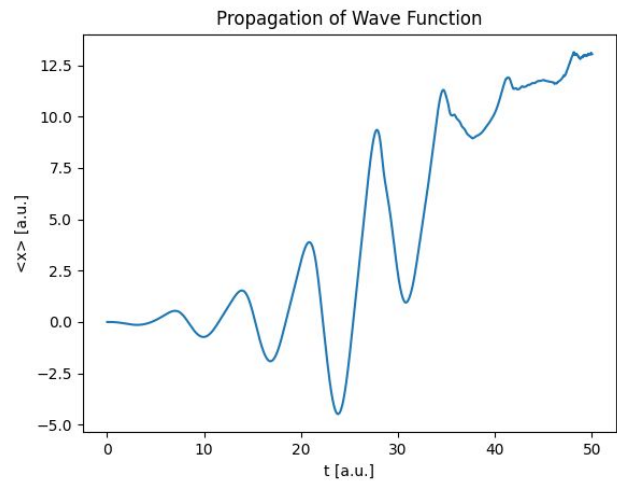
Propagation of Wave Function



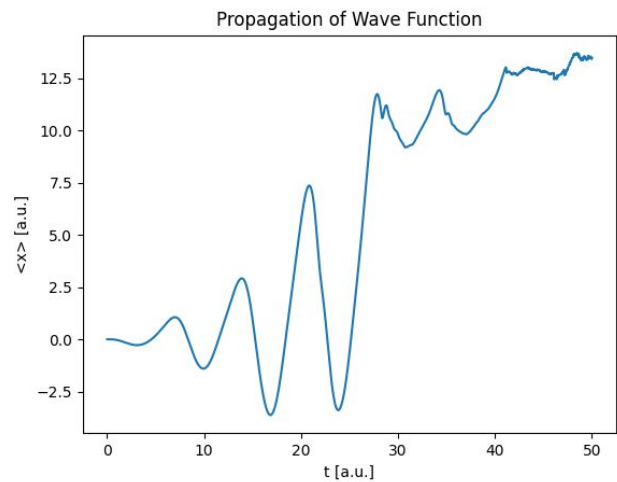


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Ground

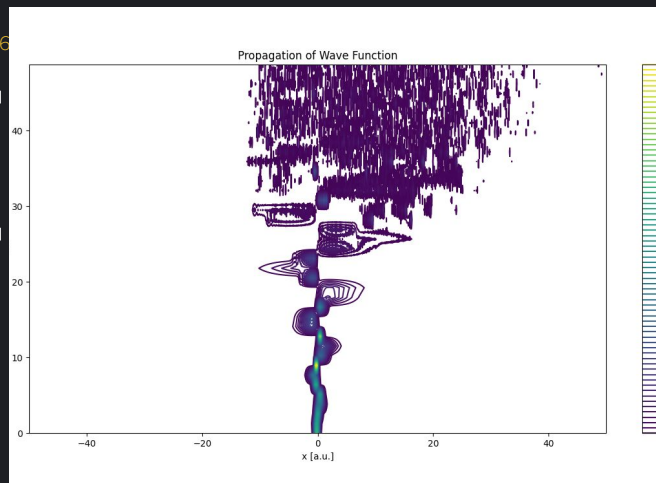


Excited



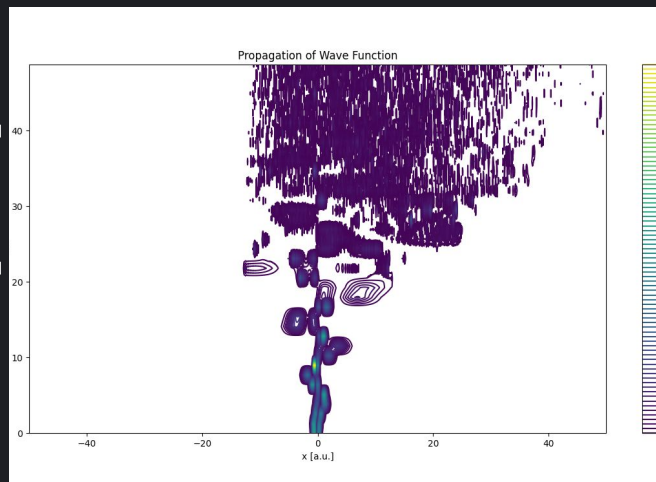
93-77156.8 176

Time [a.u.]



Probability

Time [a.u.]

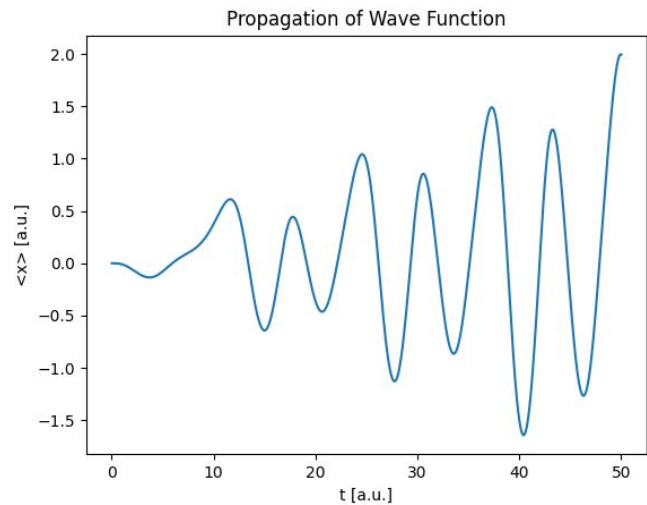


Probability



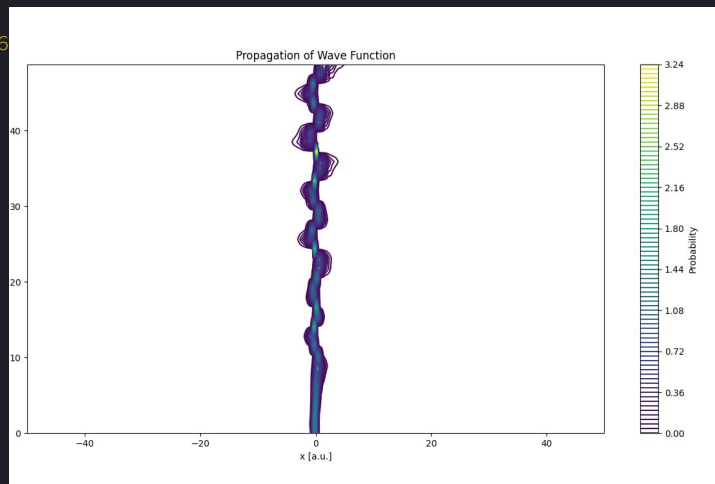
.5

Ground

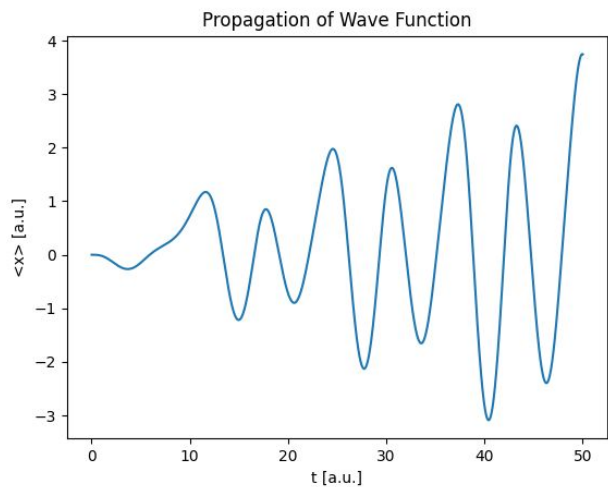


003-77156.8 176

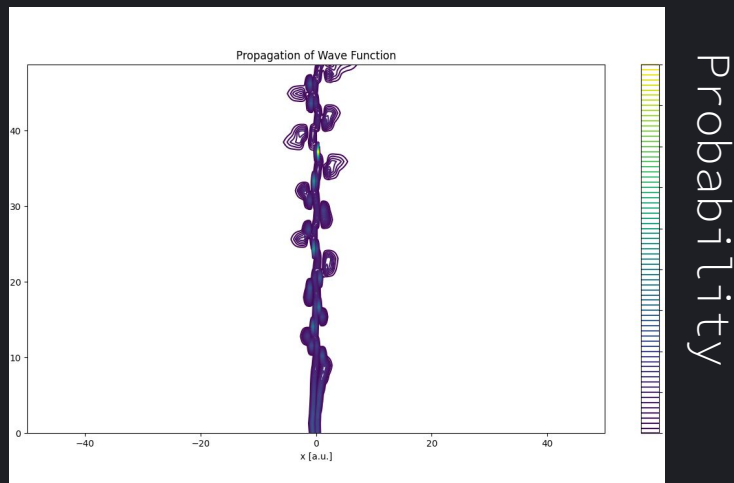
Time [a.u.]



Excited



Time [a.u.]



Probability





003-1040559

1250 003-77156.8

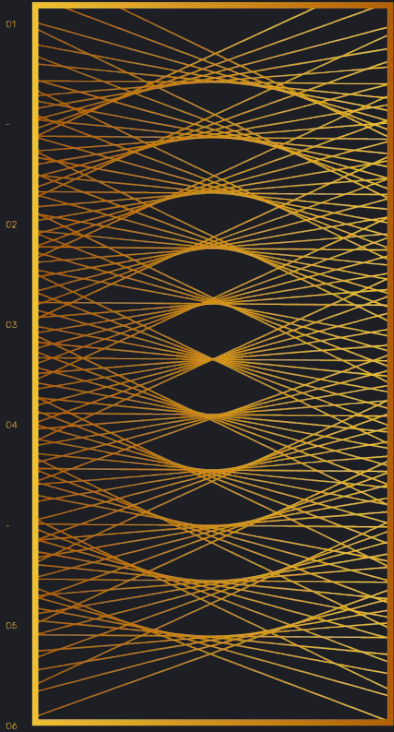
1760 0009-14563.7

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# Conclusion

The lower Omega becomes, the less the impact of oscillating potential on the expected positions become.





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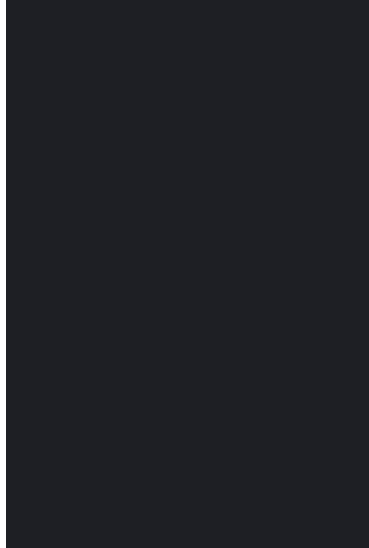
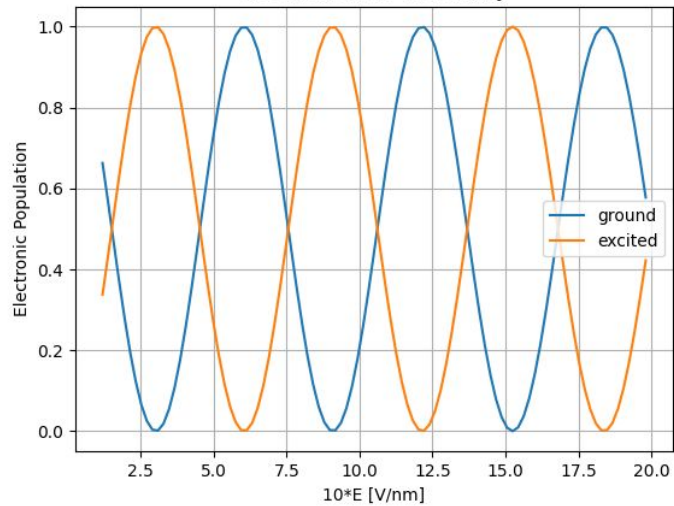
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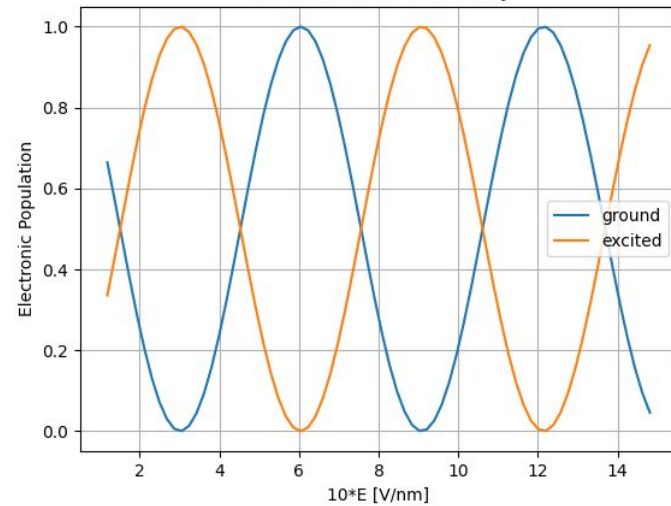
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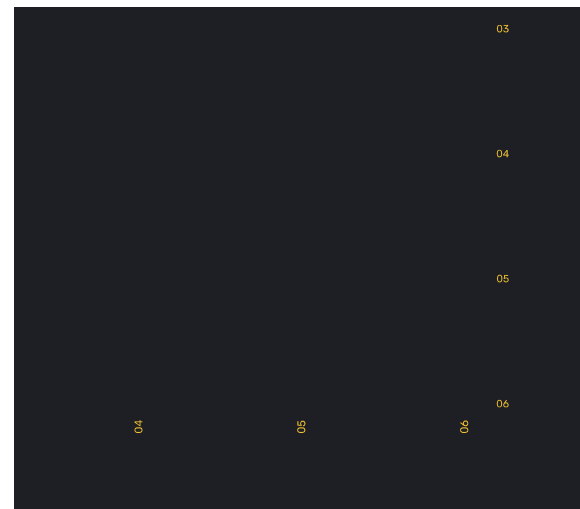
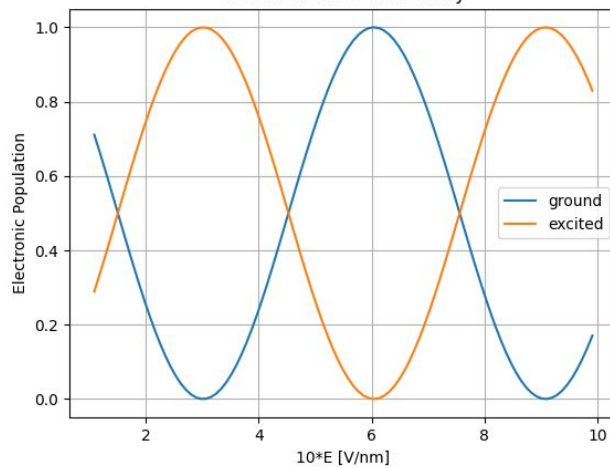
Electric Field vs Probability



Electric Field vs Probability



Electric Field vs Probability





# Conclusion

The pi pulses could be observed every .6 V/nm



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