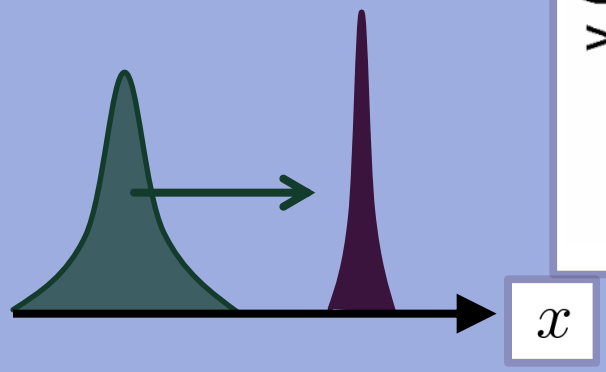
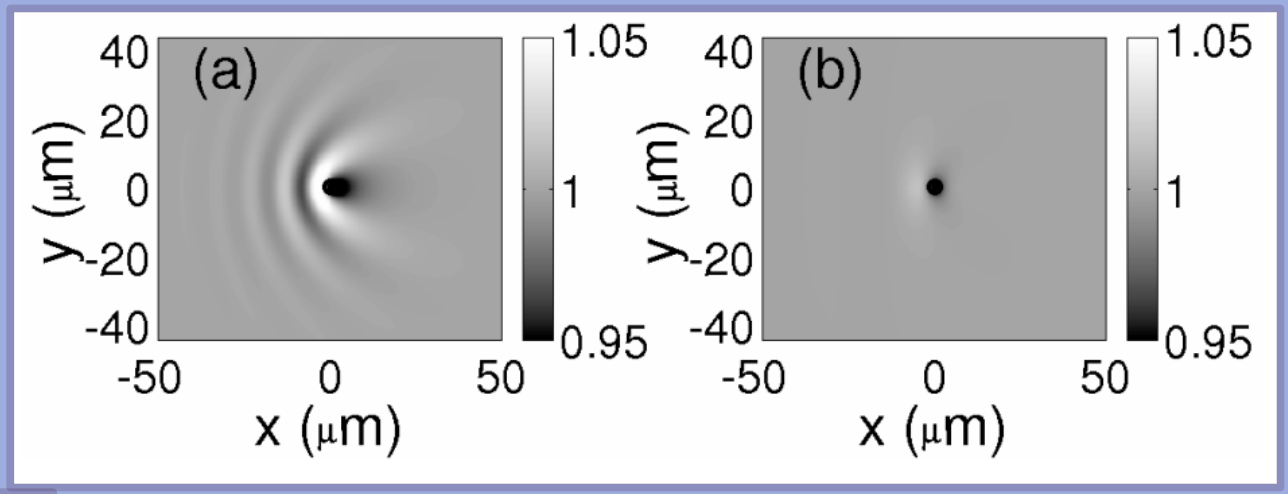
Applications of GP Equation in Microcavities

Polarization and propagation of superfluids

Scattering with a defect





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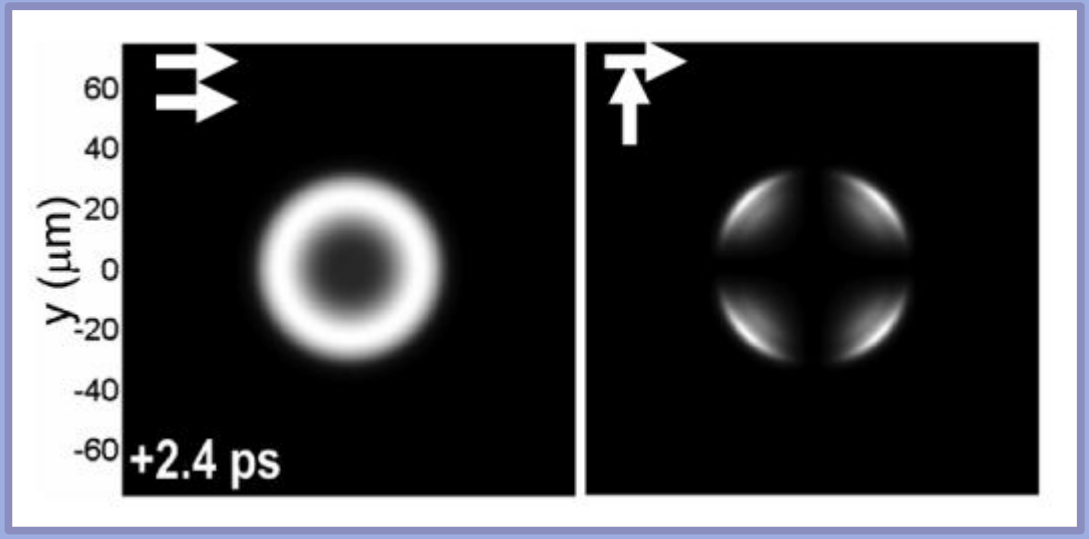
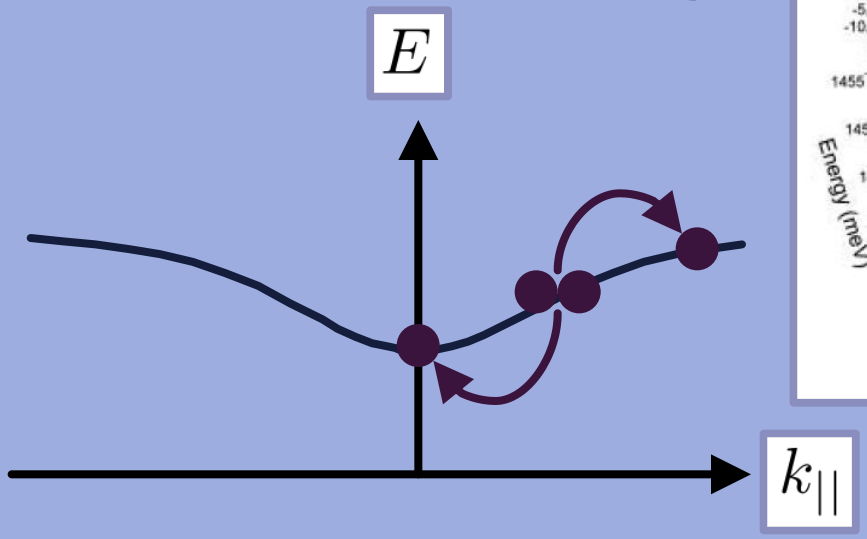
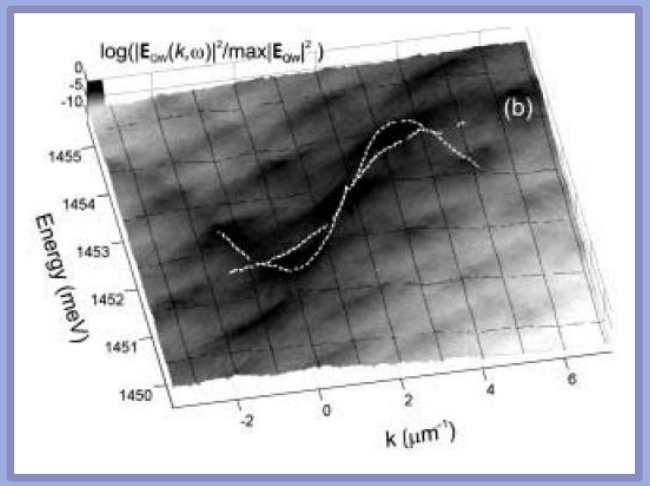


I A Shelykh, Yu G Rubo, G Malpuech, D D Solnyshkov, & A Kavokin, Phys. Rev. Lett., 97, 066402 (2006)

Applications of GP Equation in Microcavities

Parametric Scattering





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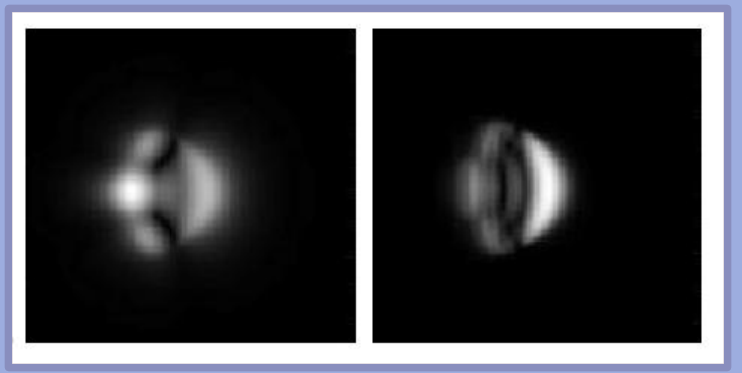
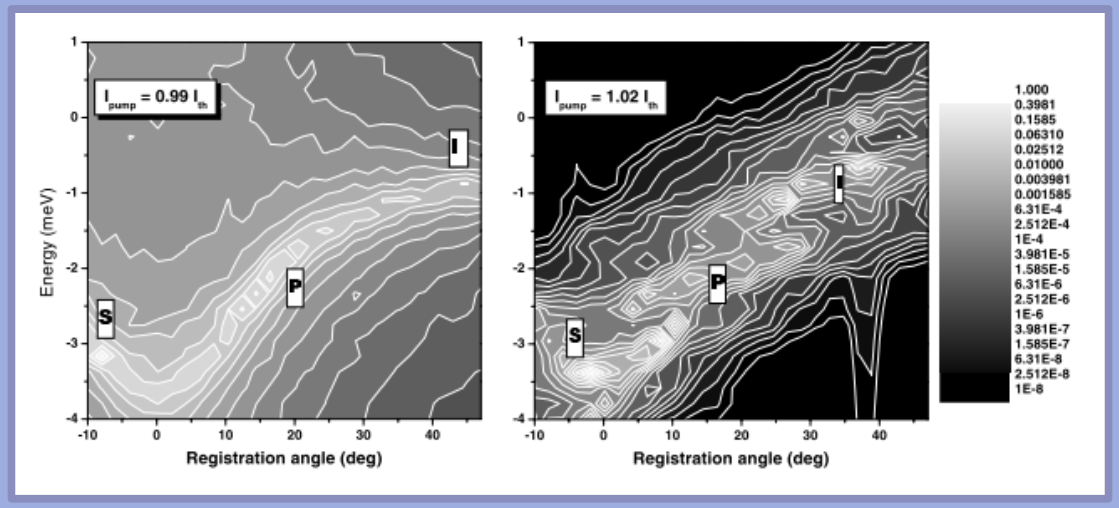


D M Whittaker, Phys. Status Solidi (c), 2, 733 (2005).



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Applications of GP Equation in Microcavities

Vortices

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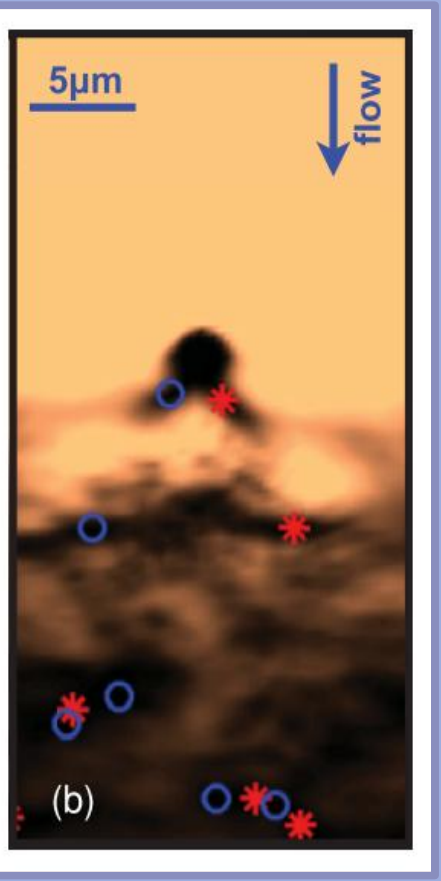

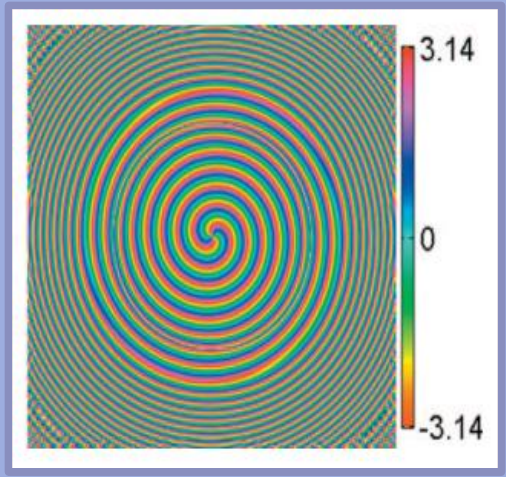

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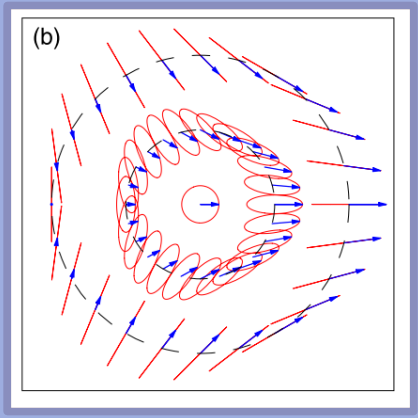

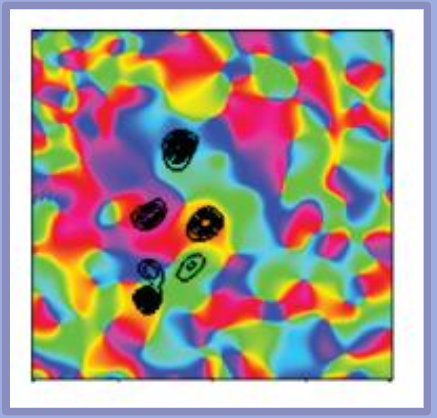

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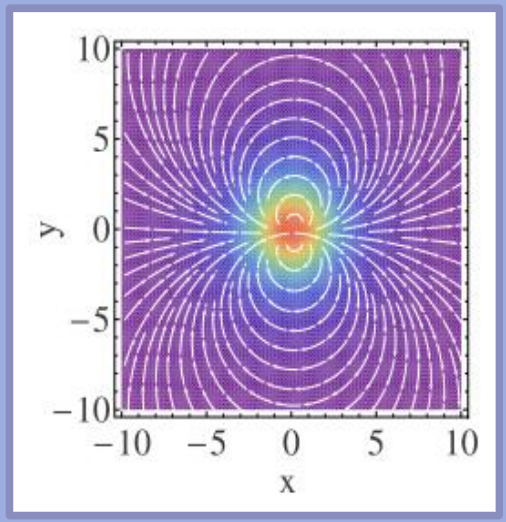

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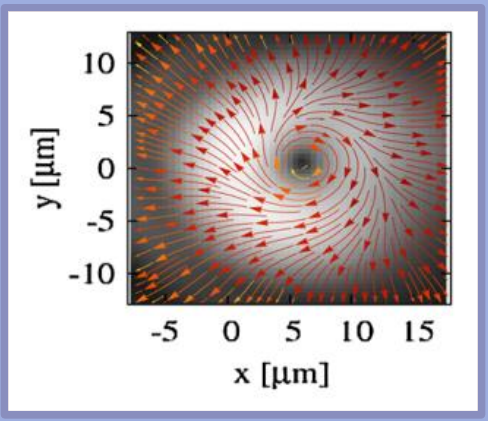

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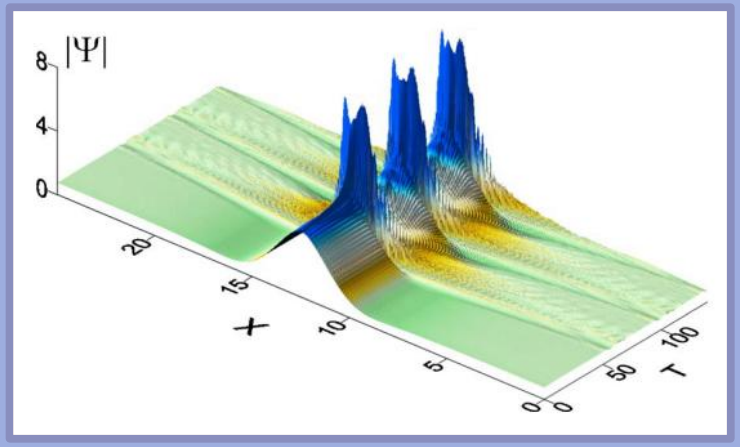
F M Marchetti, M H Szymanska, C Tejedor, & D M Whittaker, PRL, 105, 063902 (2010)

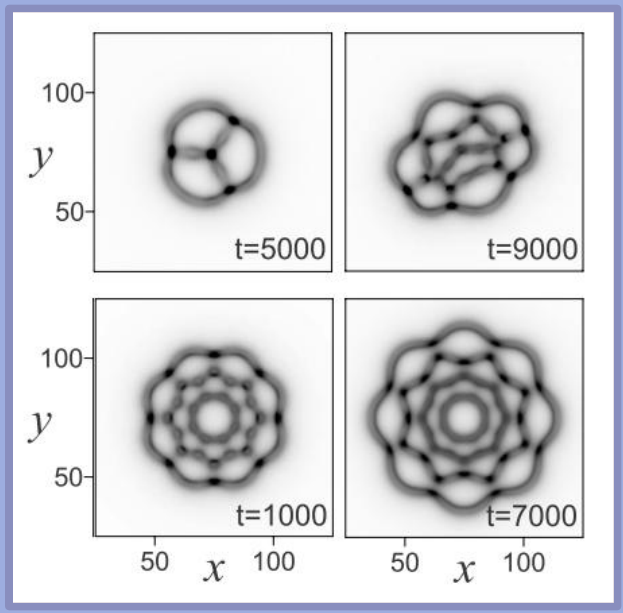
Applications of GP Equation in Microcavities

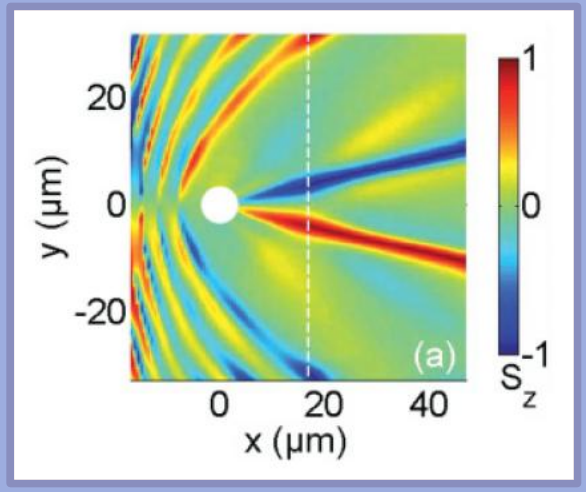
Solitons



A V Yulin, O E Egorov, F Lederer, & D V Skryabin, Phys. Rev. A, 78, 061801 (2008)

O E Egorov, D V Skryabin, & F Lederer, Phys. Rev. B, 82, 165326 (2008)





H Flayac, D D Solnyskov, & G Malpuech, Phys. Rev. B, 83, 193305 (2011)

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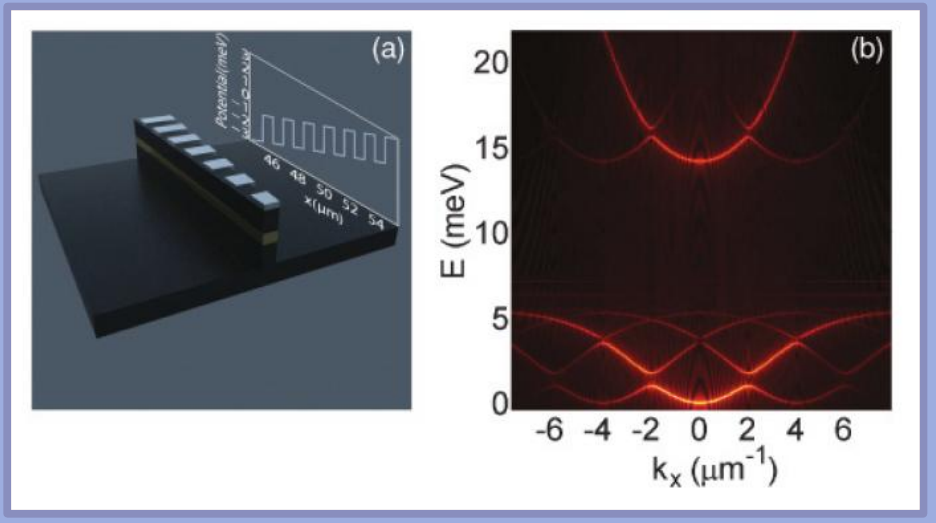
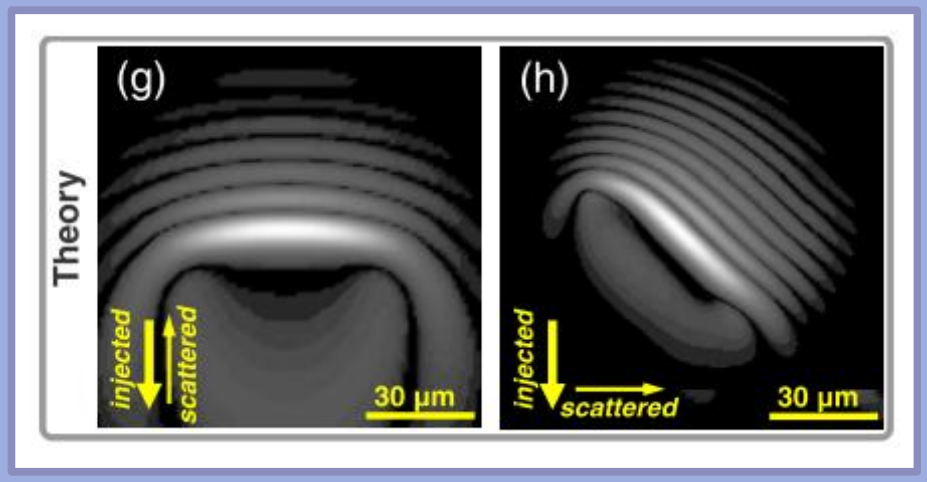
Applications of GP Equation in Microcavities

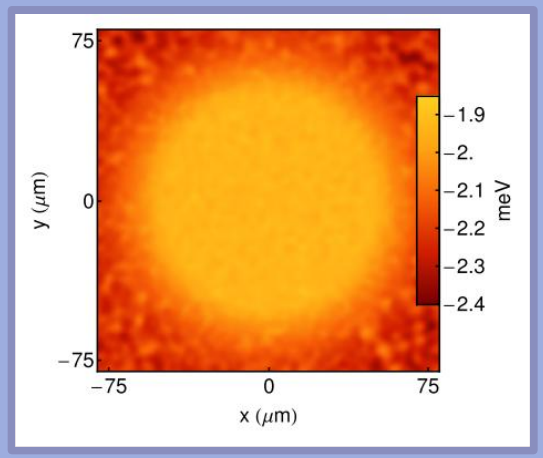
Behaviour in Non-Uniform Potentials

H Flayac, D D Solnyshkov, & G Malpuech, Phys. Rev. B, 83, 045412 (2011).





A Amo, et al., Phys. Rev. B, 82, 081301 (2010).



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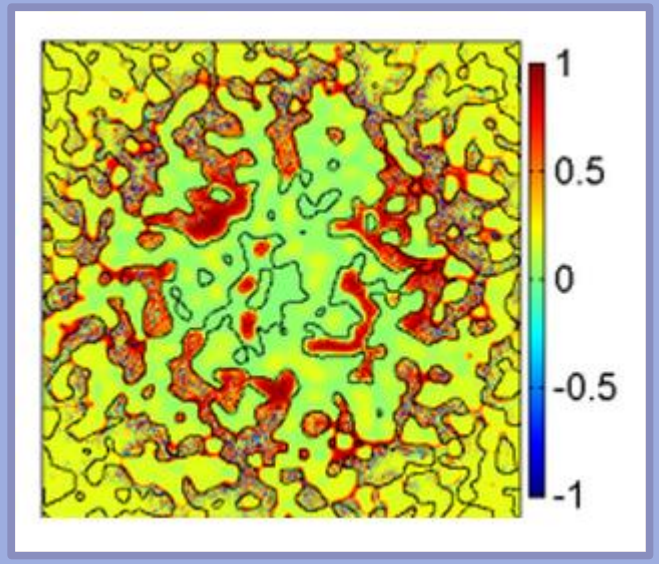
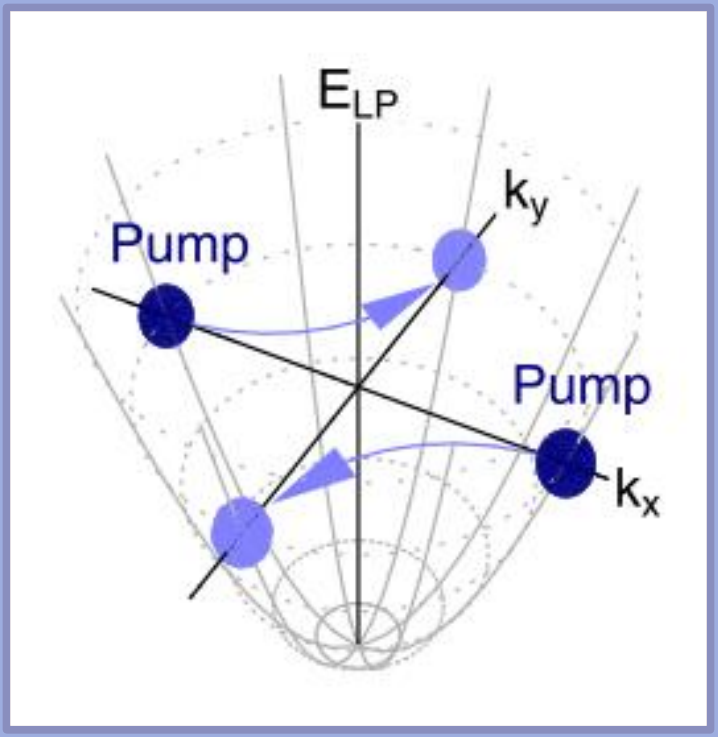
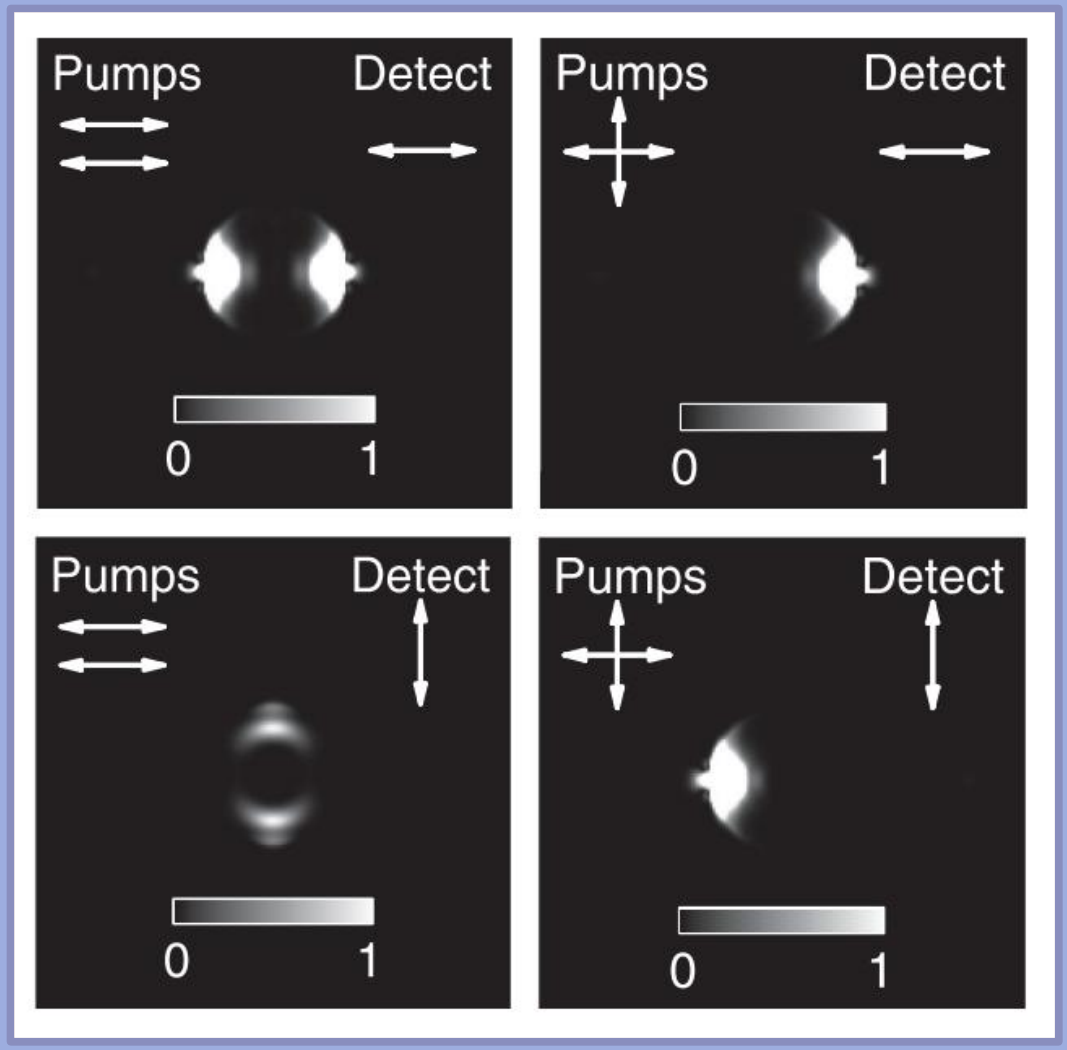


Polarization Inversion & Spin Anisotropy

Polarization Sensitive Optical Gate





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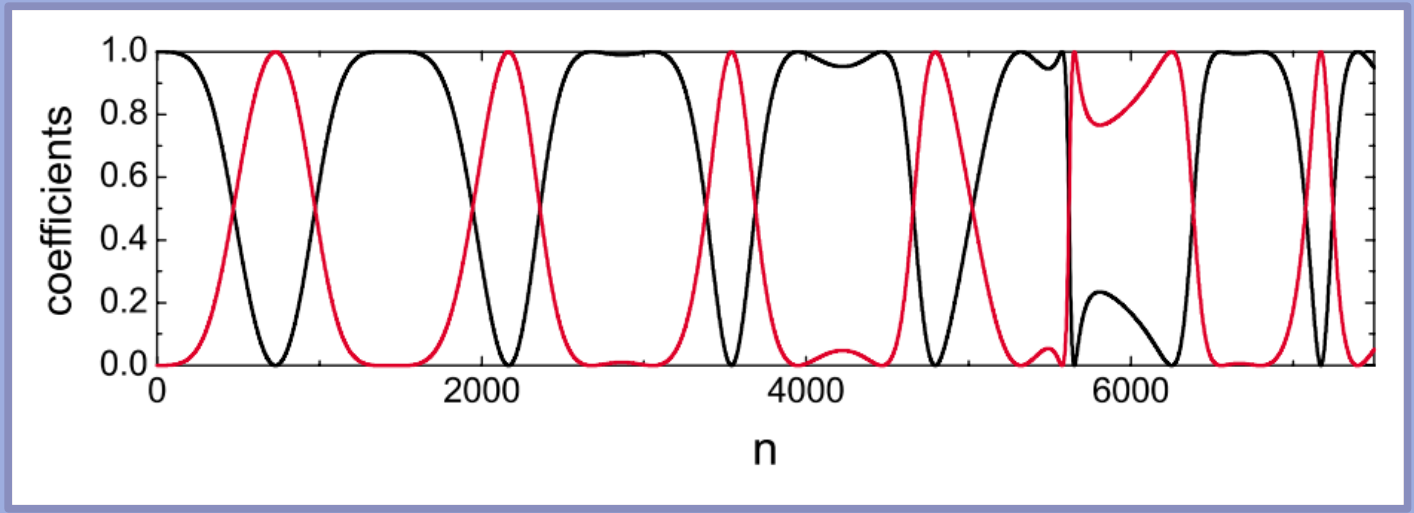
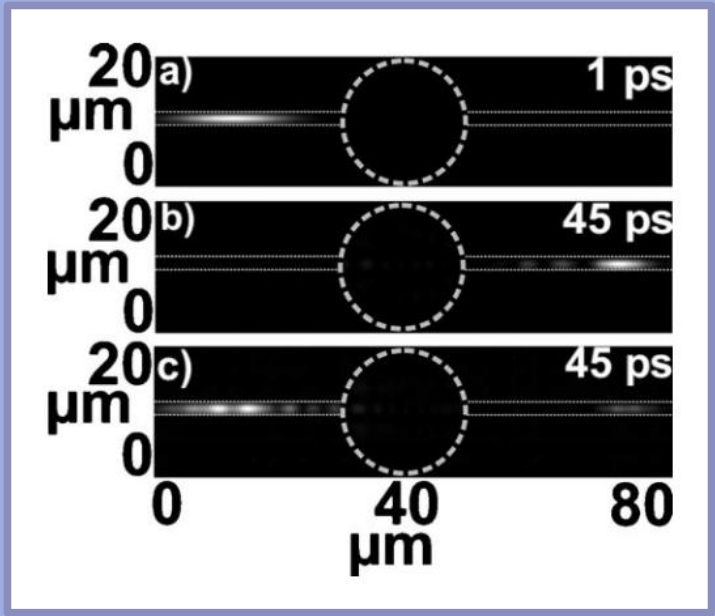
Self-Induced Larmor Precession

Optically Controlled Spin Transistor





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Stability Analysis

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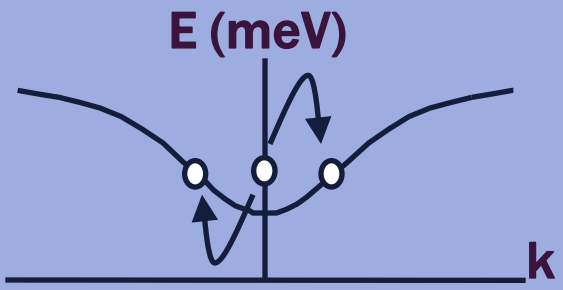
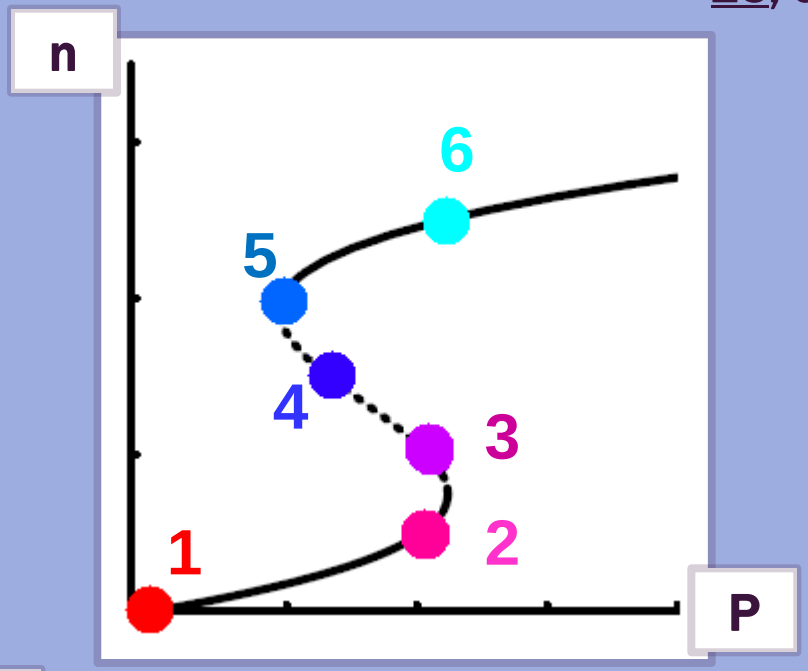
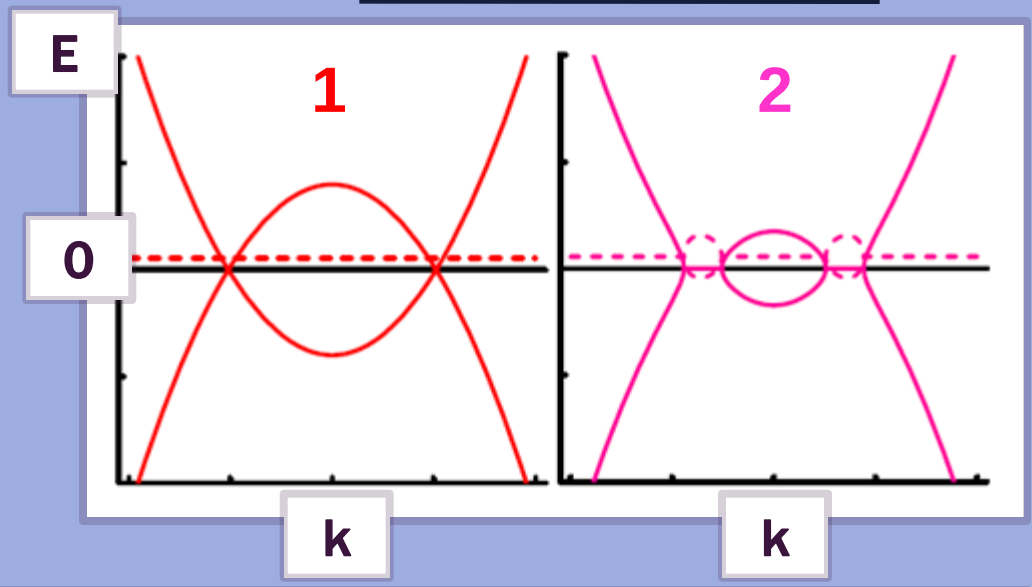
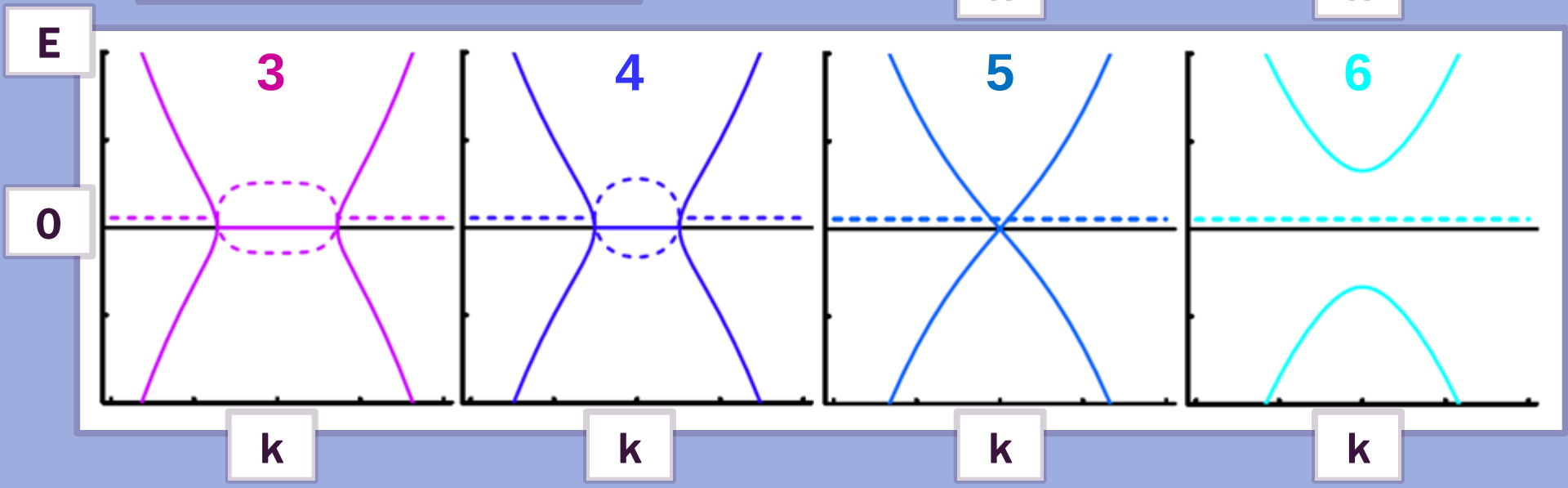




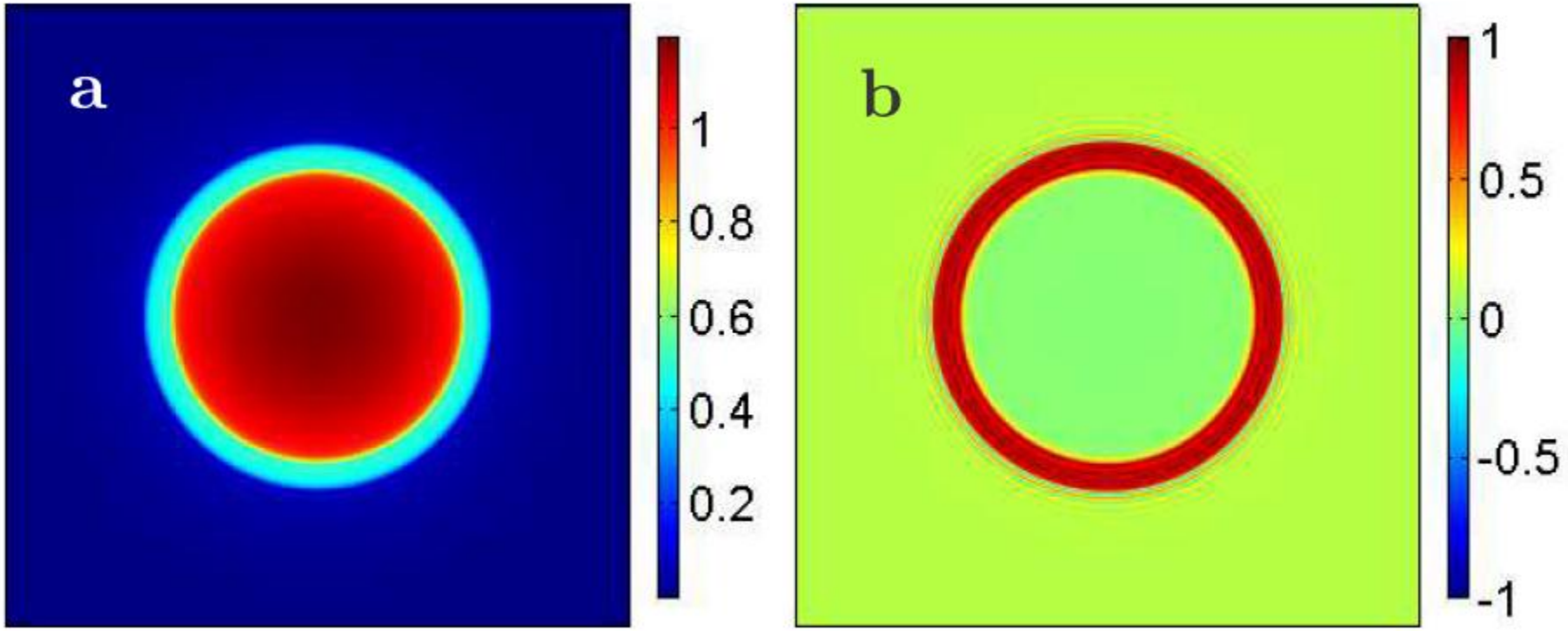




Spin Rings

Polariton Intensity

Circular Polarization Degree



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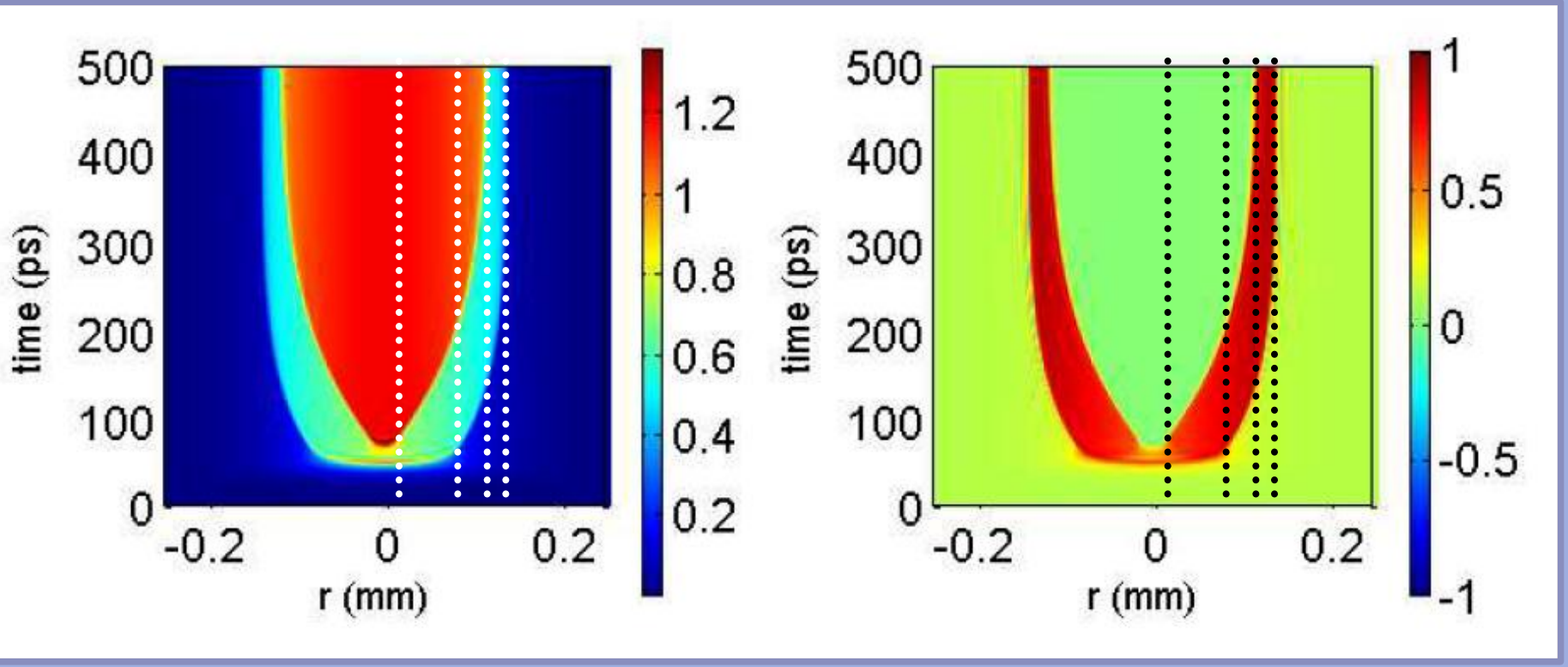
Experiments: D Sarkar, et al., Phys. Rev. Lett., 105, 216402 (2010)

C Adrados, et al., Phys. Rev. Lett., 105, 216403 (2010)

Spin Rings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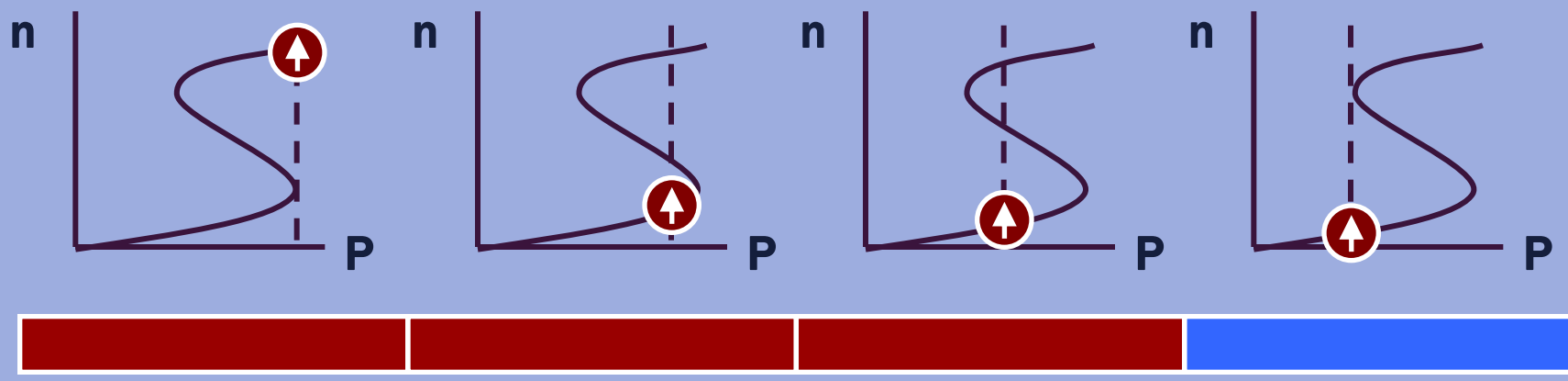
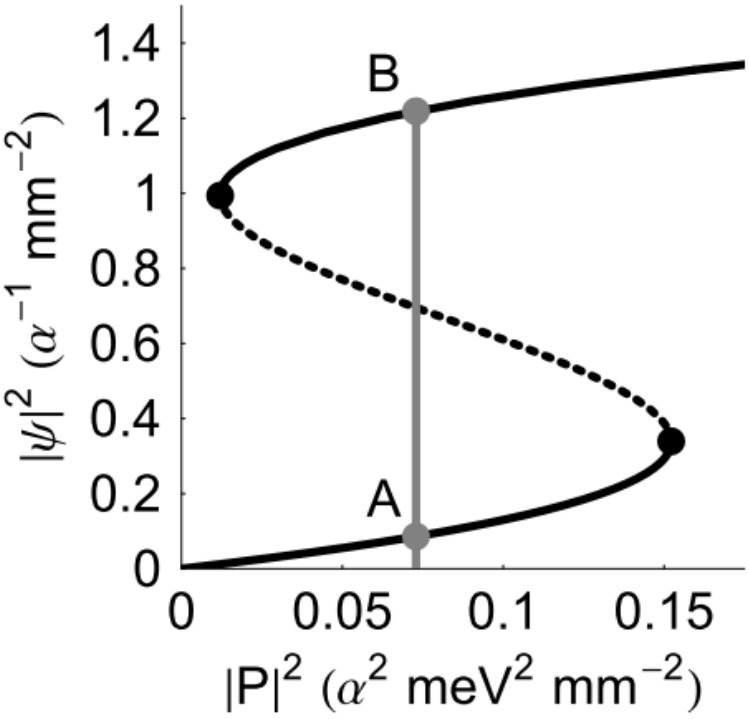
400
300
200
100
0
time (ps)
-0.2
0
0.2
r (mm)
1.2
1
0.8
0.6
0.4
0.2
1
0.5
0
-0.5
-1

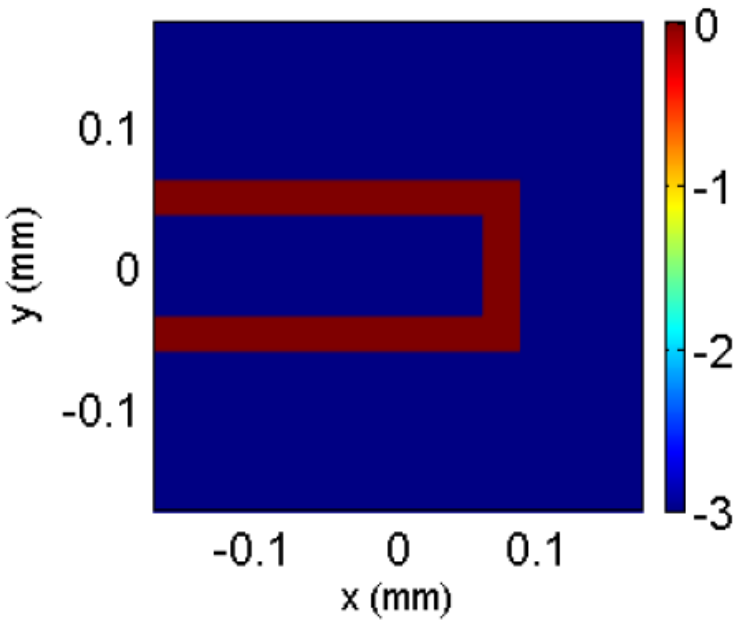

n
P
n
P
n
P
n
P

Polariton Neurons

Excite in the bistable zone



Potential Profile (meV)



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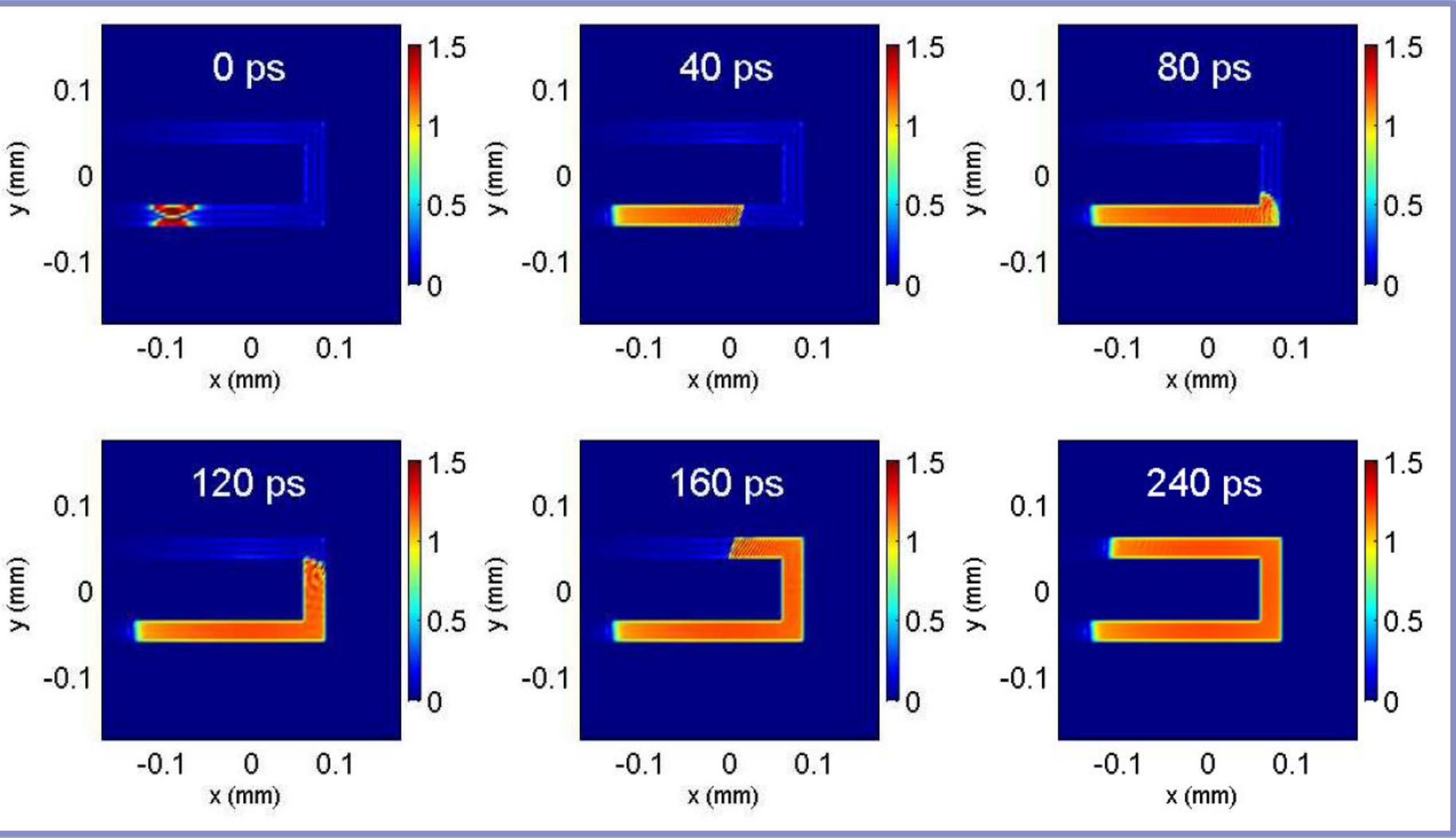
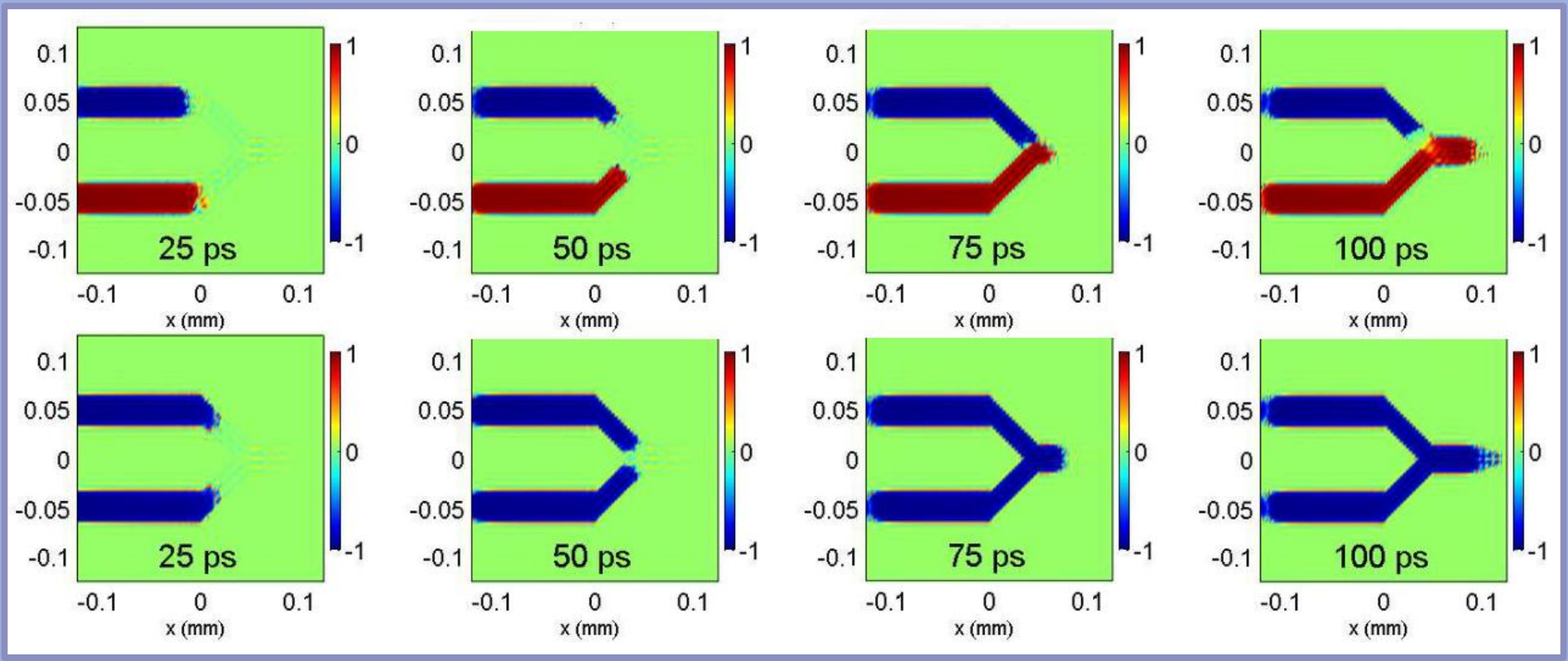
Polariton Neurons



1.8×10^6 m/s

T C H Liew, A V Kavokin, & I A Shelykh, PRL, 101, 016402 (2008)

Polariton Neurons



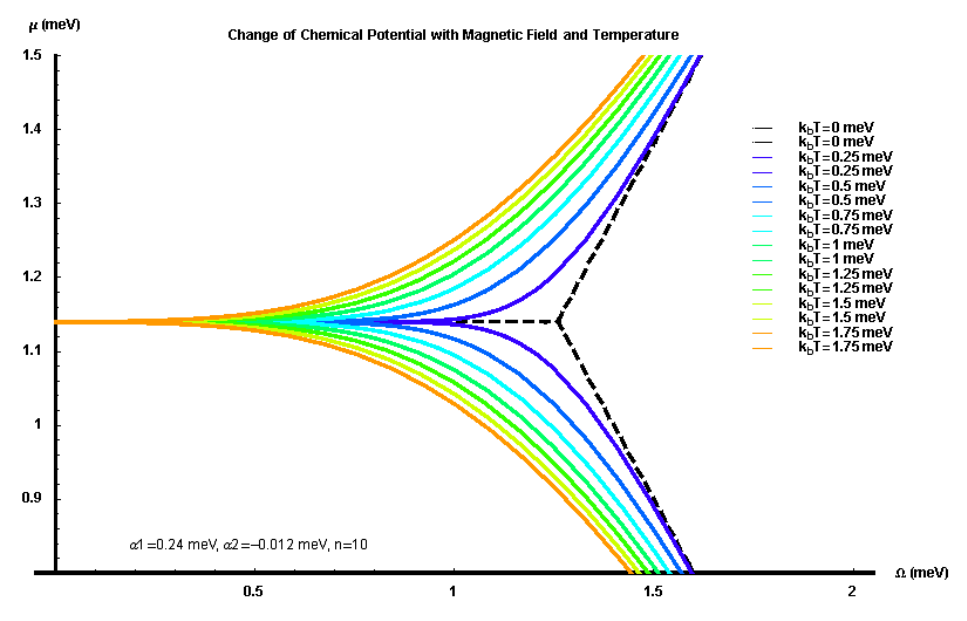
5GHz repetition rate

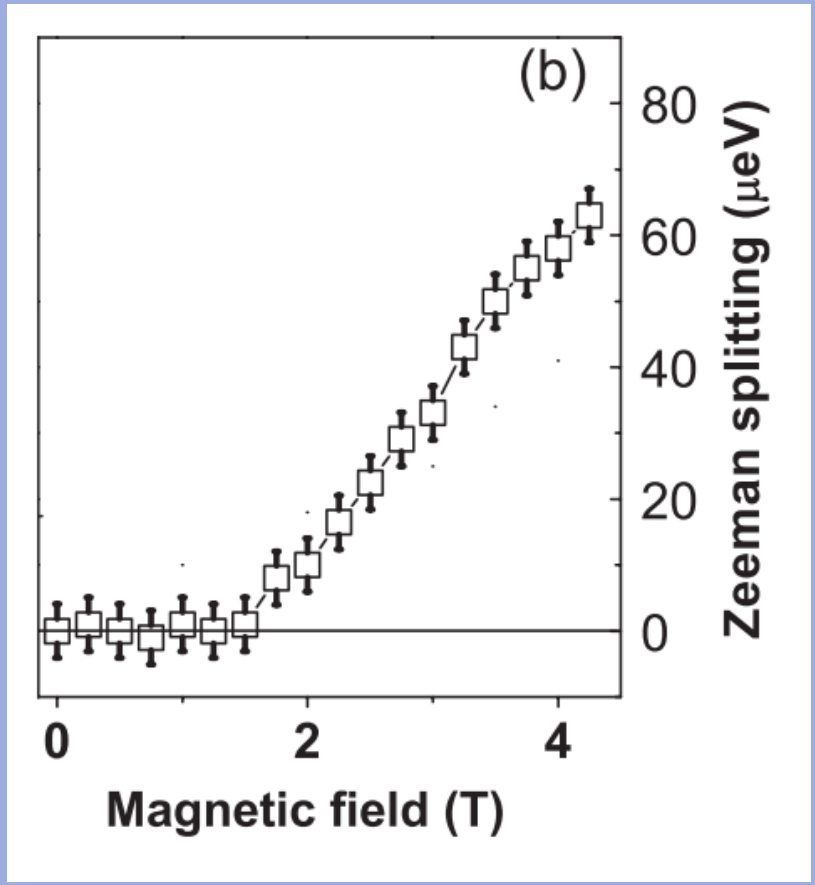
10ps tolerance in pulse arrival time

1.8×10^6 m/s

T C H Liew, A V Kavokin, & I A Shelykh, PRL, 101, 016402 (2008)

Zeeman Splitting Suppression





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