

Enabling science and technology

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Office members

Objectives

Highlight 1

Highlight 2, 3...

| Enabling Science and technology | |
|---------------------------------|---------------------|
| Jean-François Roch | LAC |
| Takis Kontos | LPA |
| Jocelyn Achard | LSPM |
| Philippe Goldner | Chimie Paristech |
| Valia Voliotis | INSP |

Number of groups : ~20

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New materials/setup

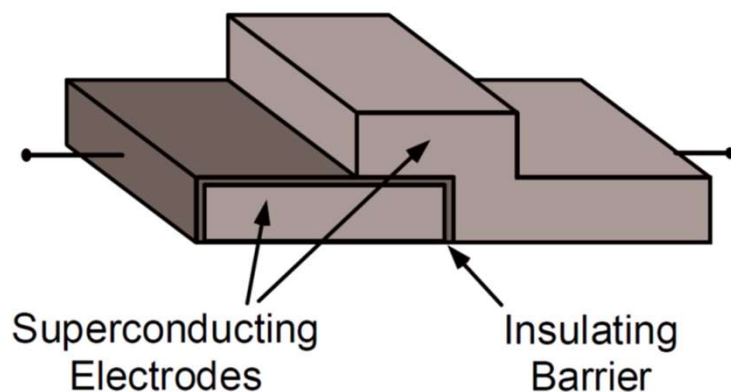
Si, carbon nanotubes, diamond, self assembled quantum dots, semiconducting nanowires, micropillars, nanoscale mechanical resonators... but also new setups with known material

Theory

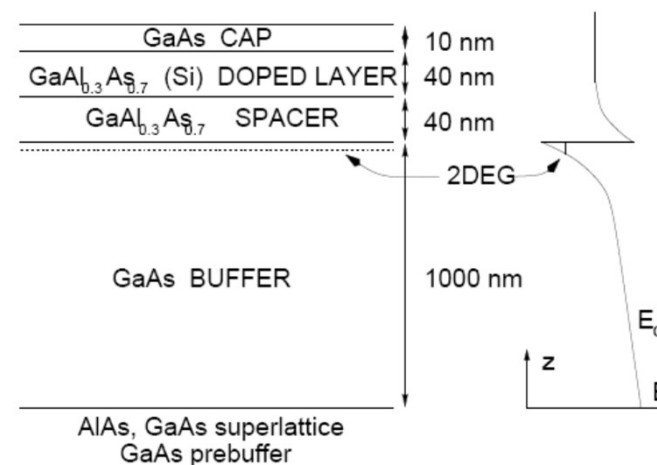
Understanding of new platforms, propose new experiments, emergence of new phenomena (e.g. related to topology... maybe important for QIP in the future)

Understand properties of basic systems-> may lead to new technologies

... within the project focus on technological aspects.



Josephson junction



2DEG

Josephson junction: superconducting quantum bits

2 dimensional electron gas: spin quantum bits, quantum transport, electron quantum optics...

Understand properties of basic systems, manipulate and control their quantum coherence

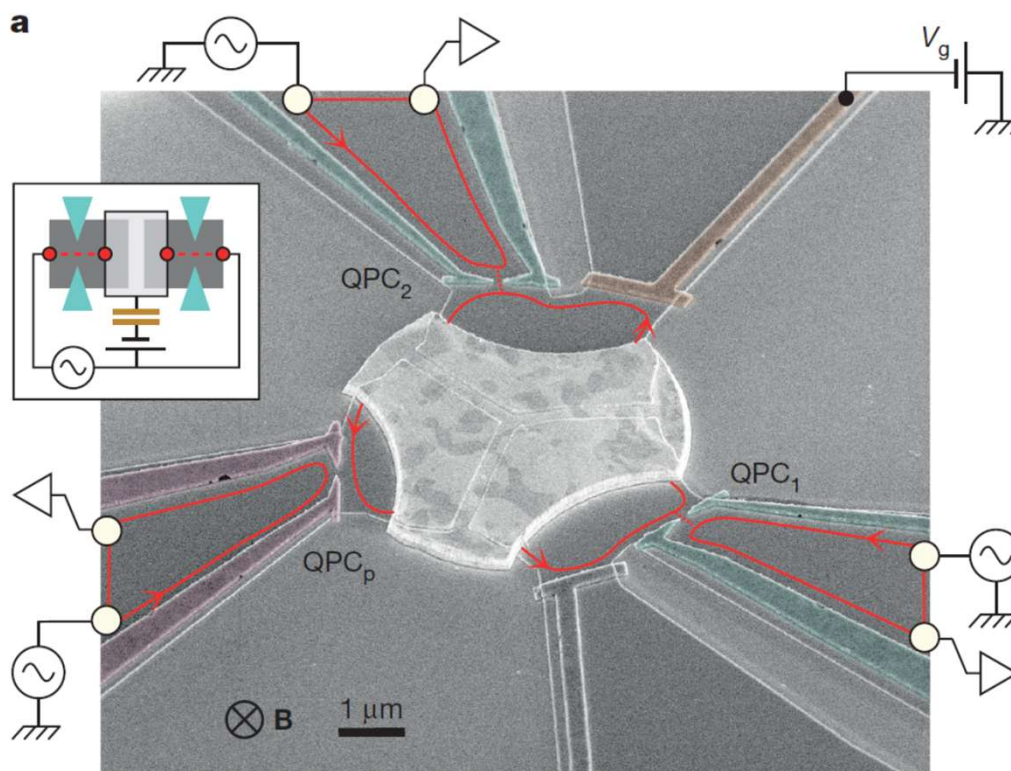
Hopefully stimulate technological innovations

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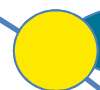


Z. Iftikhar et al. Nature'15

Observation of the 2 channel Kondo effect ; F. Pierre, C2N

Many body physics, quantum phase transition

Maybe new platform for quantum simulation ?



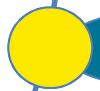
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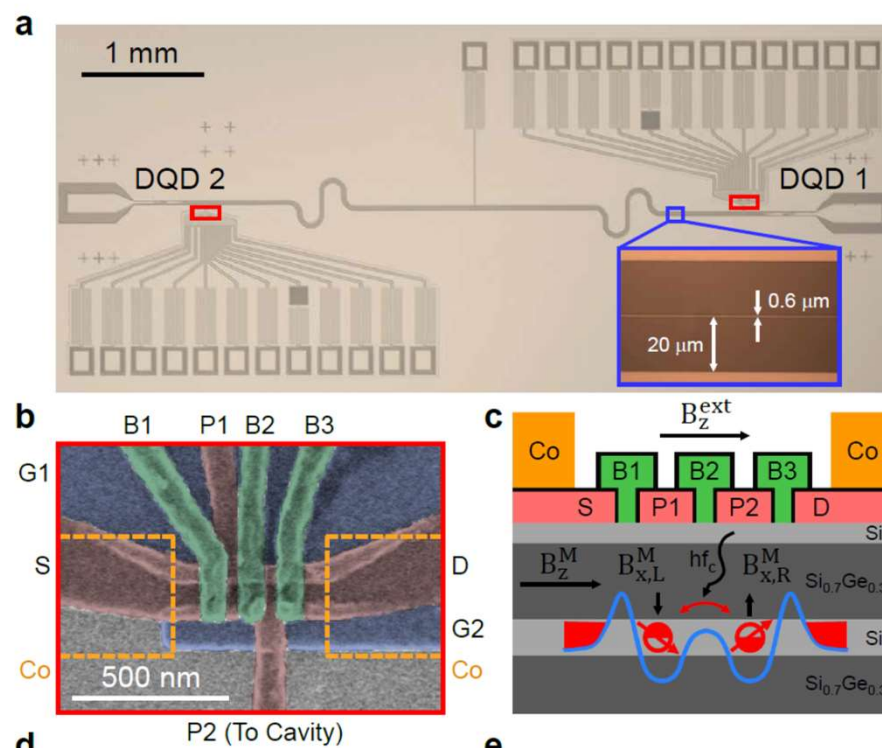
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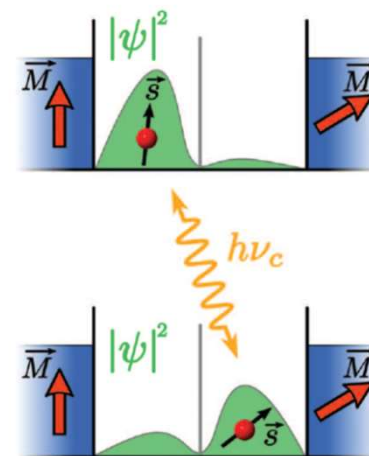
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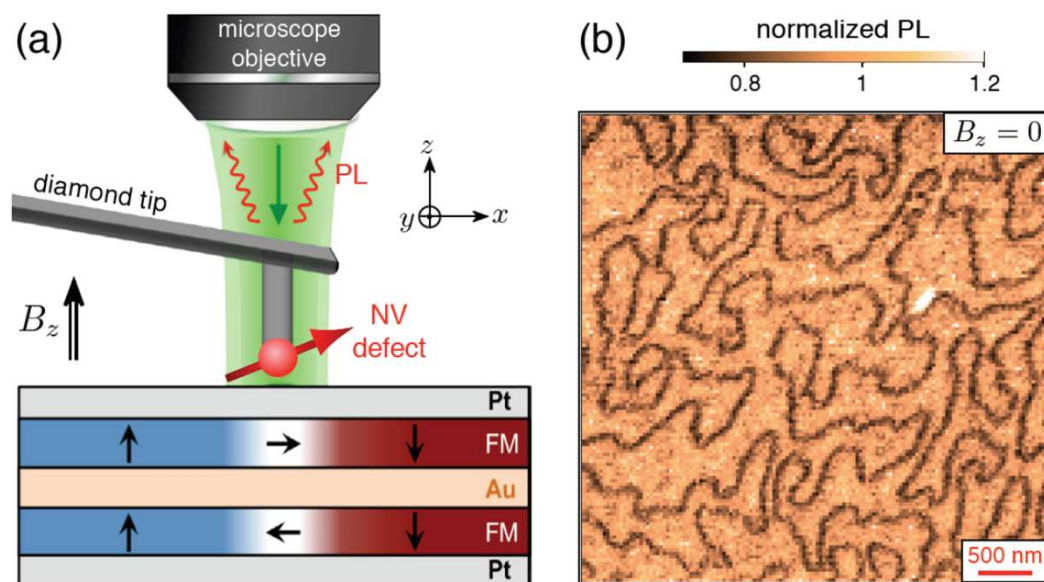
X. Mi et al. Arxiv:1710.03265



Strong spin/photon coupling in Si double quantum dots in cQED, J. Petta, Princeton

Coupling of spins via cavity photons ?

Quantum information with spins in Si



I. Gross et al. Arxiv:1709.06027

I. Gross et al. Nature'17

Study of magnetic skyrmions, antiferromagnetic BiFeO_3 , V. Jacques, Montpellier

Non invasive, ultra-sensitive probe of delicate magnetic texture

Related to quantum sensing....