



Modelování kvantové odezvy NV defektů

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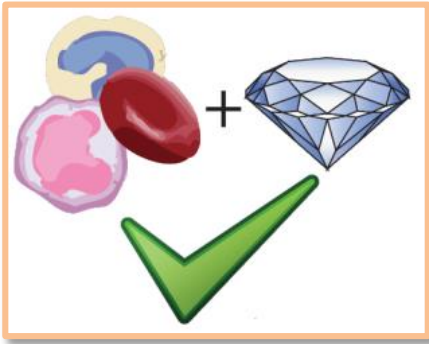
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²FBMI CVUT, Kladno, Czech Republic

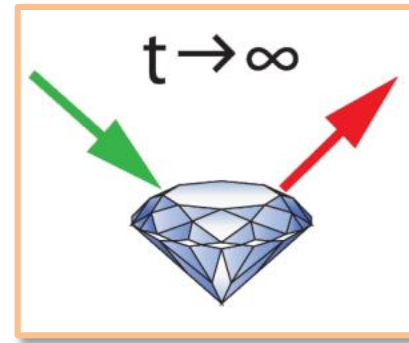
IMO-IMOMEC



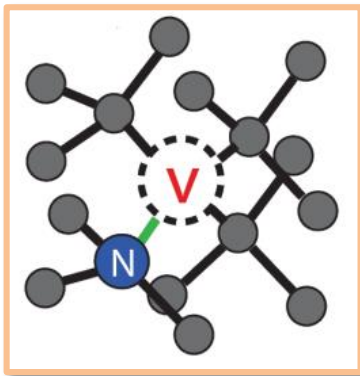
Diamant jako materiál



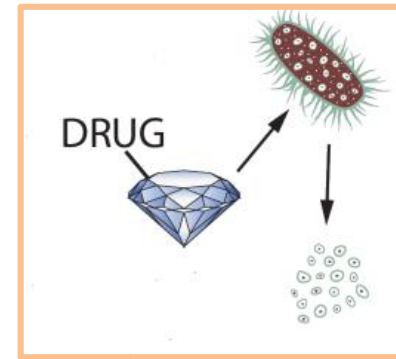
Biokompatibilní



Fotostabilita

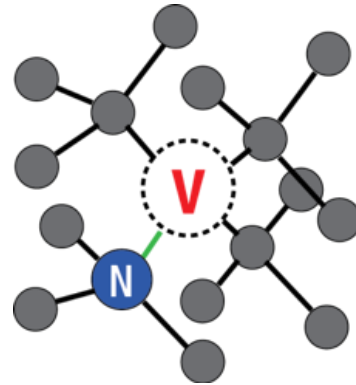


Luminiscence



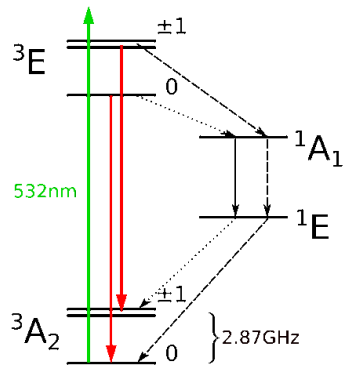
Přenos léčiva

NV defekt pro kvantové technologie



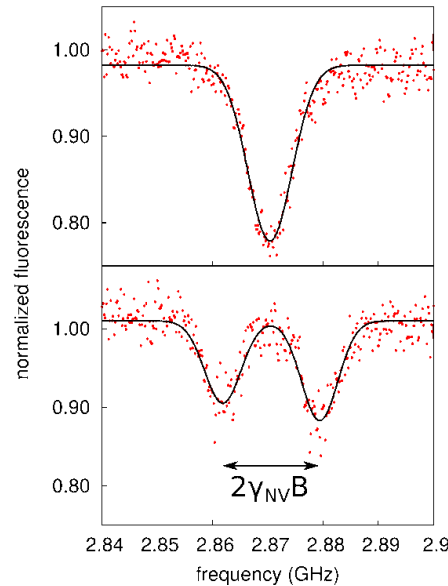
NV⁻ 6 elektronu
NV⁰ 5 elektronu
NV⁺ 4 elektrony

a)



[1]

b)



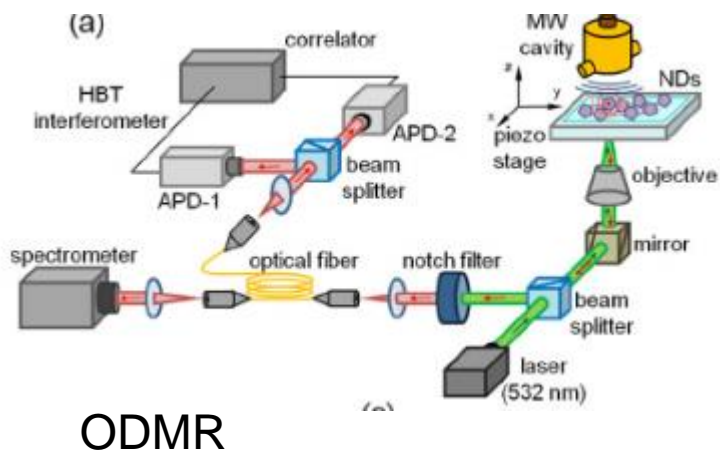
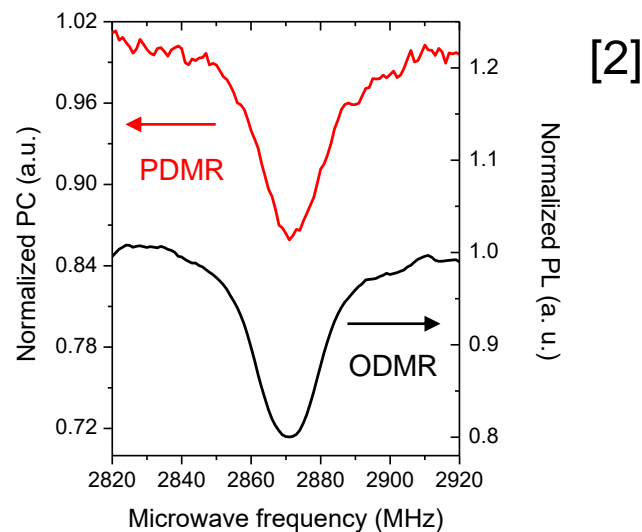
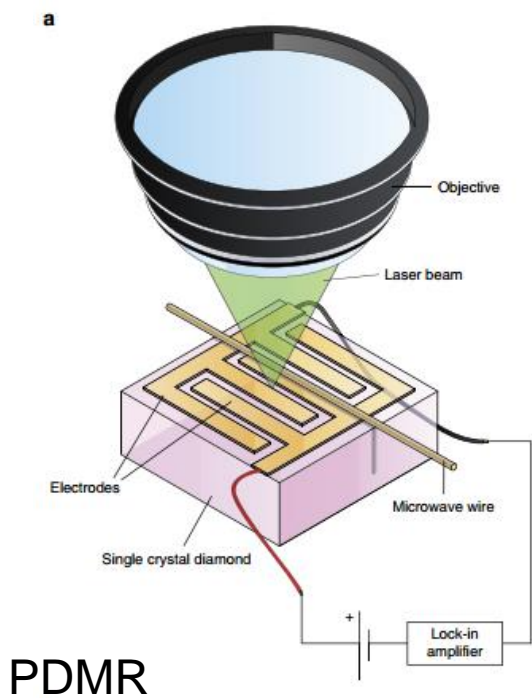
Spinový stav NV⁻ GS

- Optická inicializace do $m_2 = 0$
- MW manipulace
- Optický readout

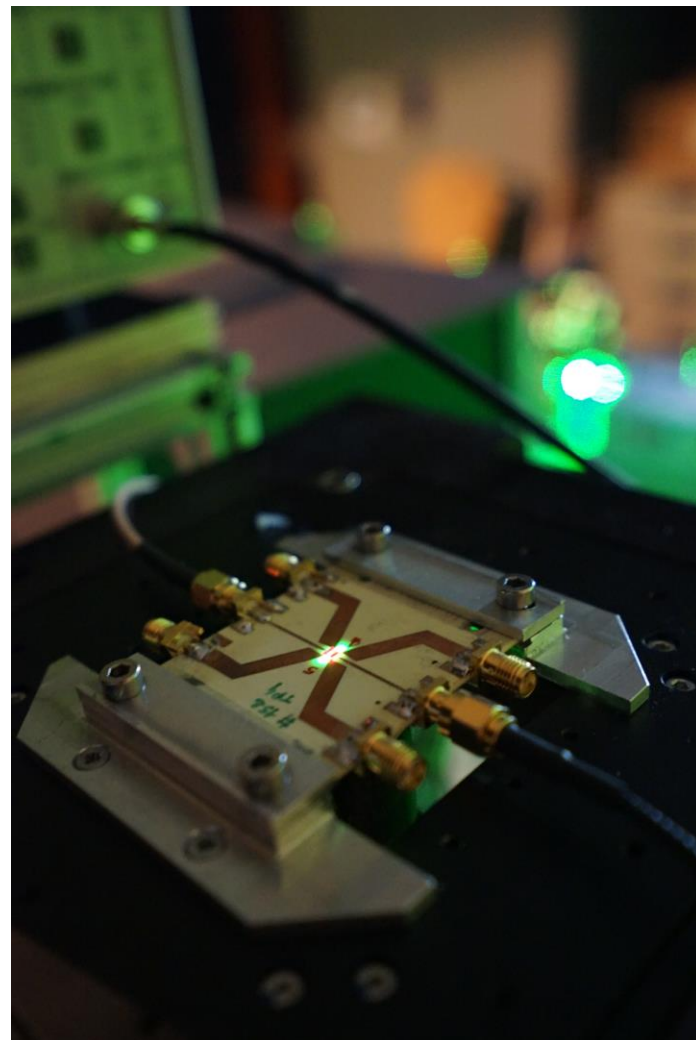
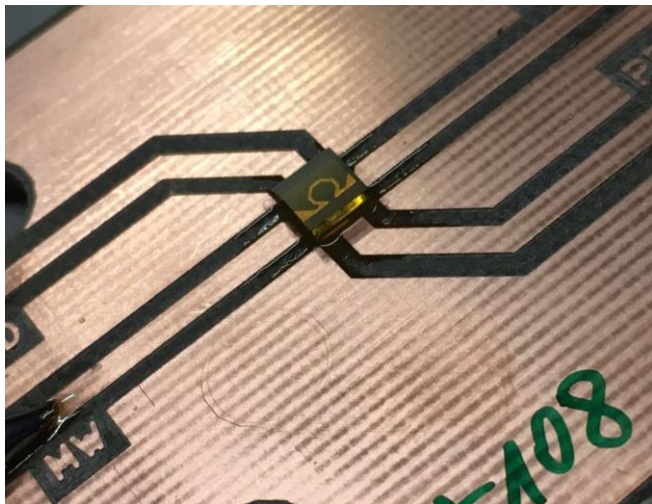
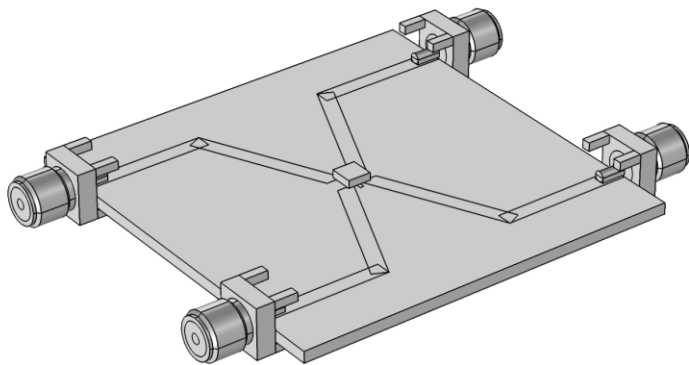
- NV⁻ GS je možné použít jako RT kubit

Opticky/fotoelektricky detekovaná magnetická rezonance

Metody pro měření slabého magnetického pole ~ 10 fT

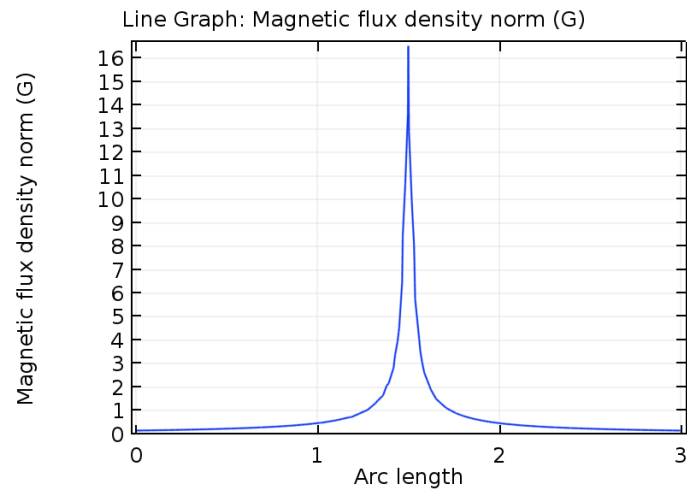
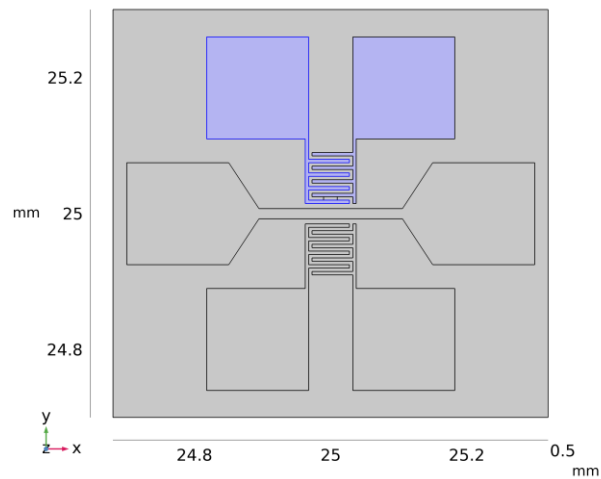
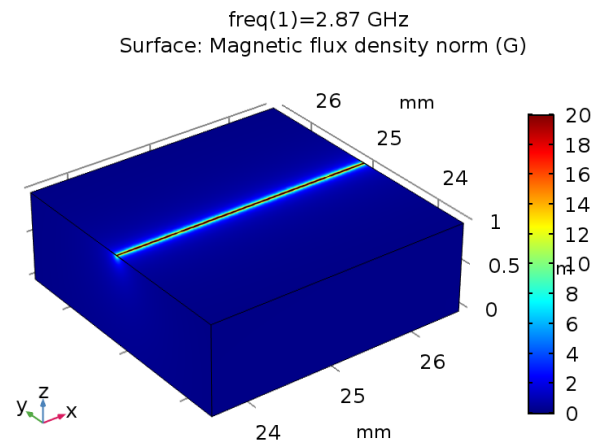
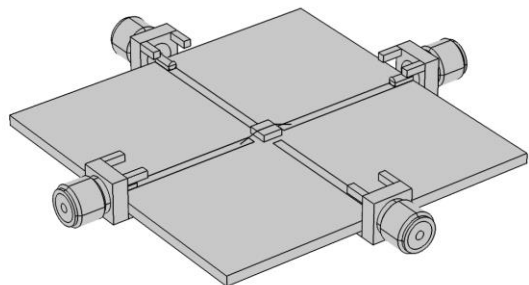


Uspořádání čipu

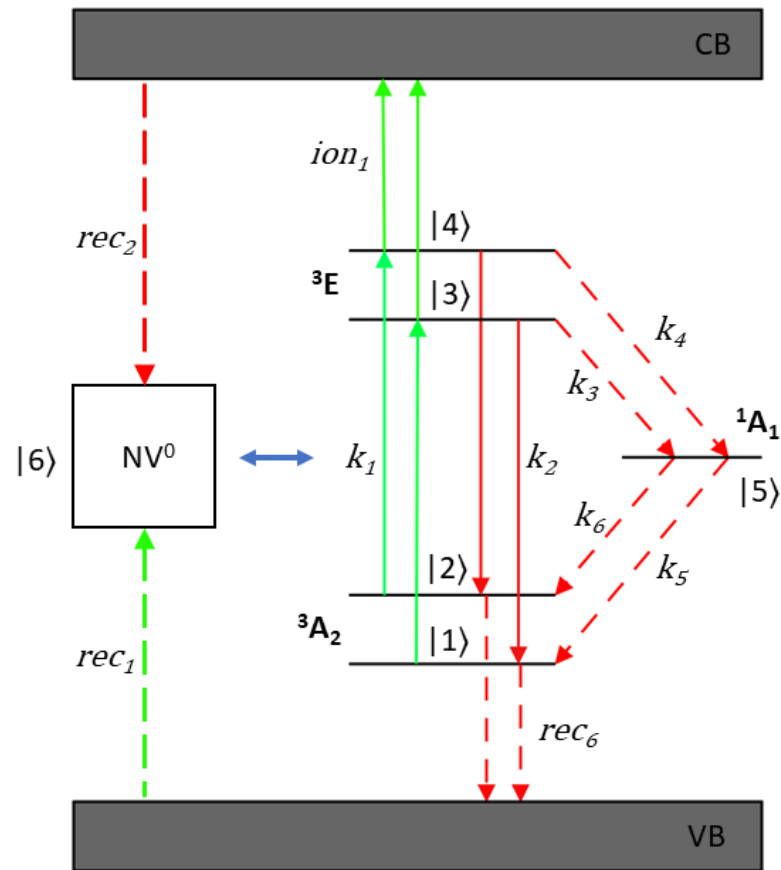


COMSOL část

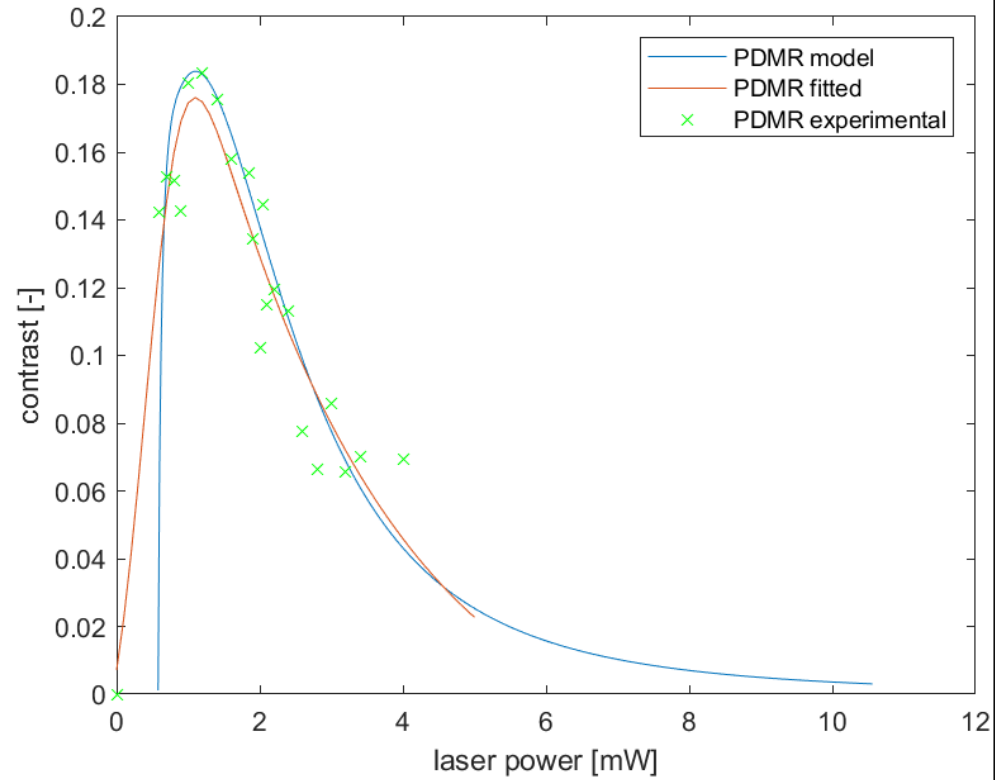
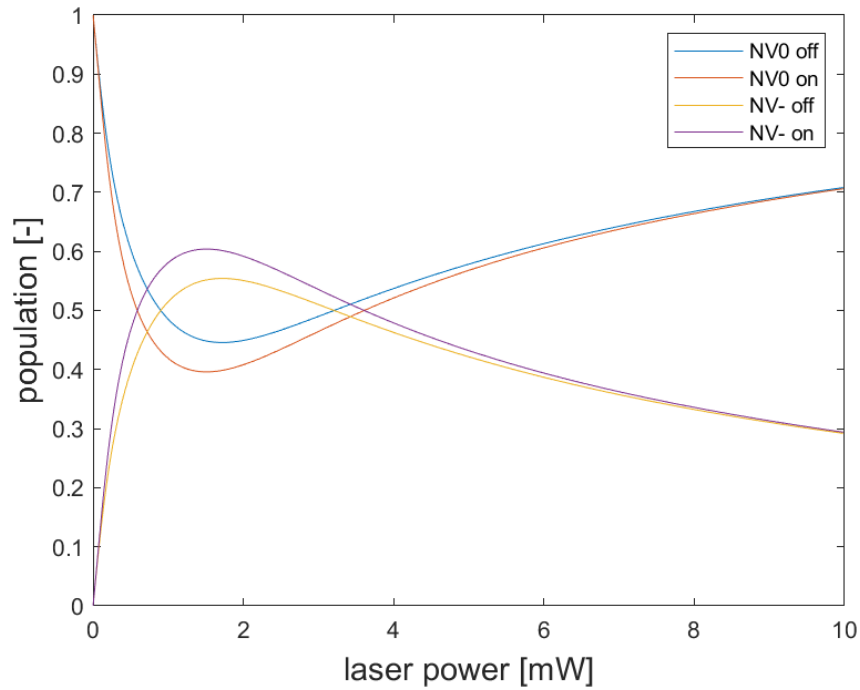
Mikrovlnná excitace krystalu



MatLab - 0D modelování

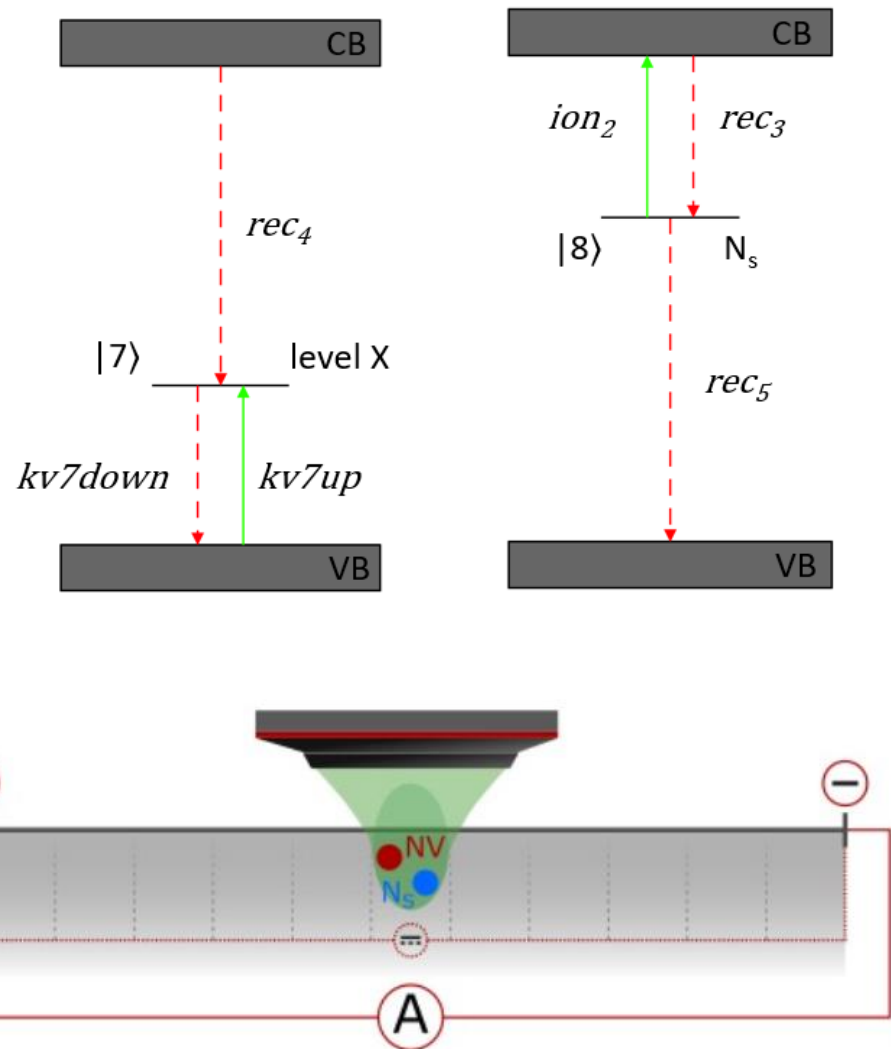
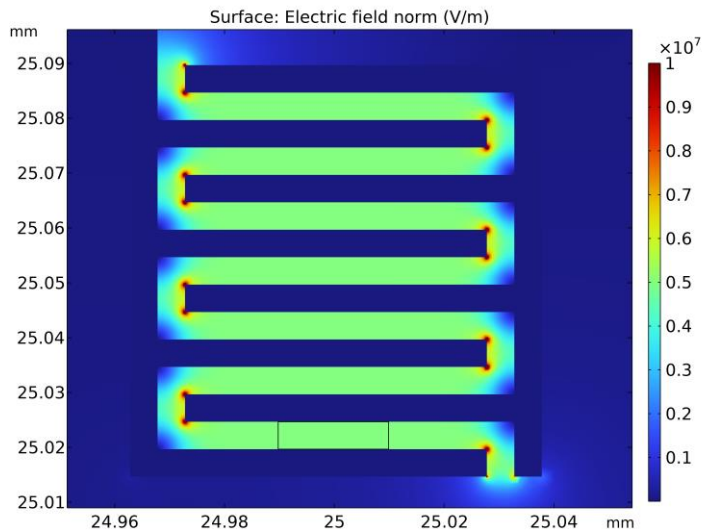


MatLab - 0D modelování



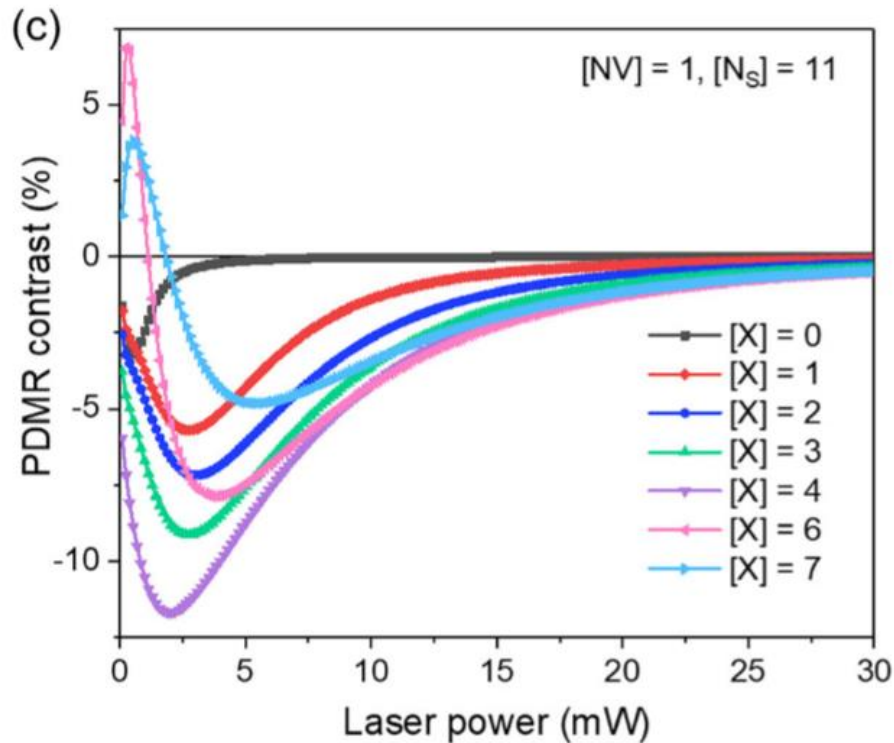
MatLab - 1D modelování

- Modelování různých druhů interakce
- Drift a difúze nositelů náboje
- Přiblížení reálné krystalové struktury

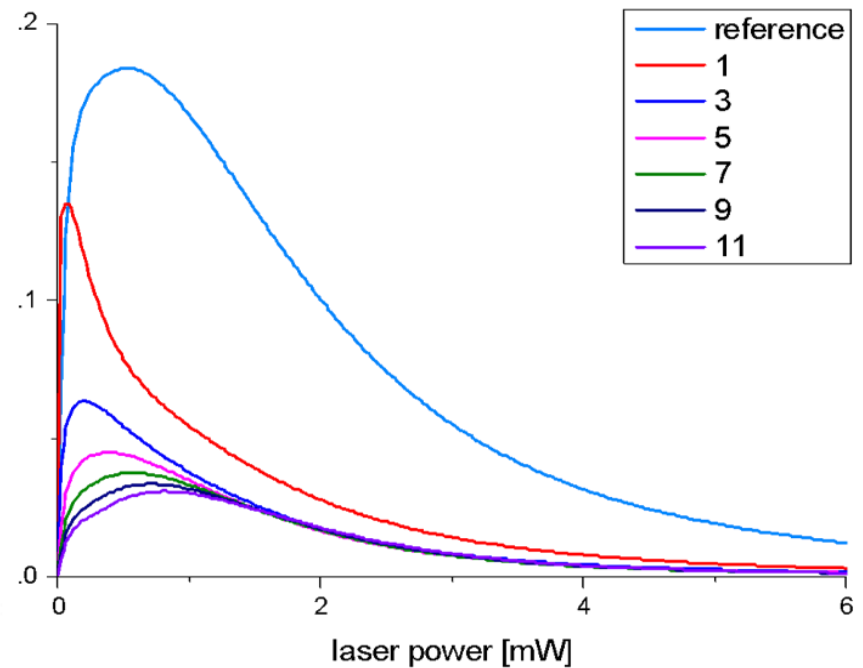


MatLab - 1D modelování

Variace X ve vzorku [3]



Variace N_s ve vzorku



Využití technologie (práce naší skupiny)

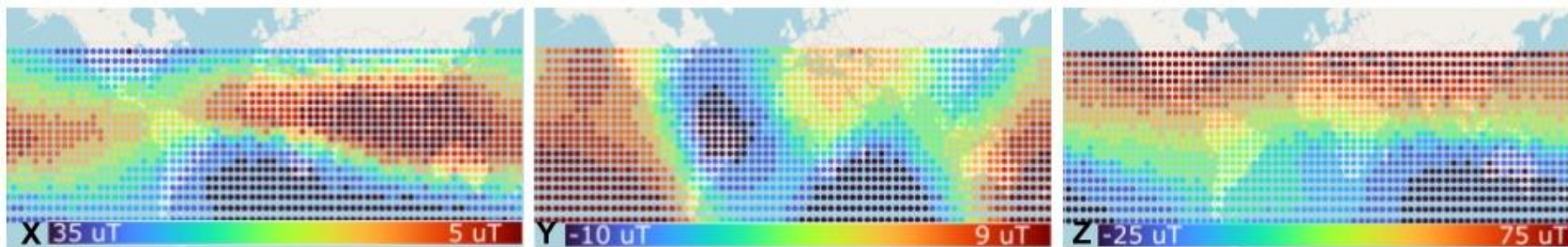
- OSCAR
- Spolupráce s ESA v rámci „Orbit your thesis“



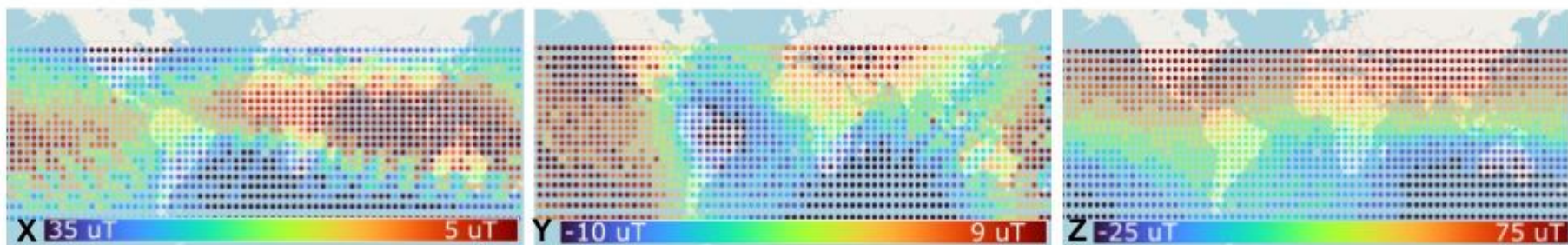
Využití technologie (práce naší skupiny)

RESULTS

IGRF model



OSCAR-QUBE



Děkuji za pozornost

