

MEETING WITH SENIOR STUDENTS

to study or not to study the postgraduate

... that is the question

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Jan Král

Important dates:

- deadline for submitting an e-application: 1. 4. - 15. 5. 2021 (1 round)
- date of entrance exams: 17. 6. 2021 (1 round)

A handling fee

- electronically filed application 700,- Kč (28 EUR)

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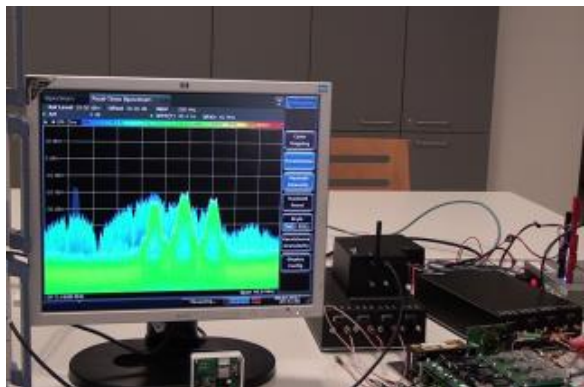
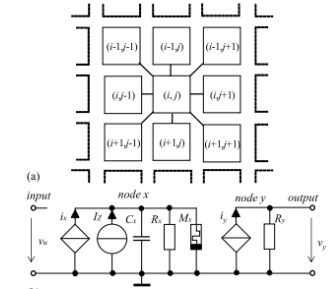
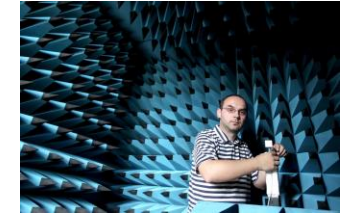
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Should I study Ph.D.?

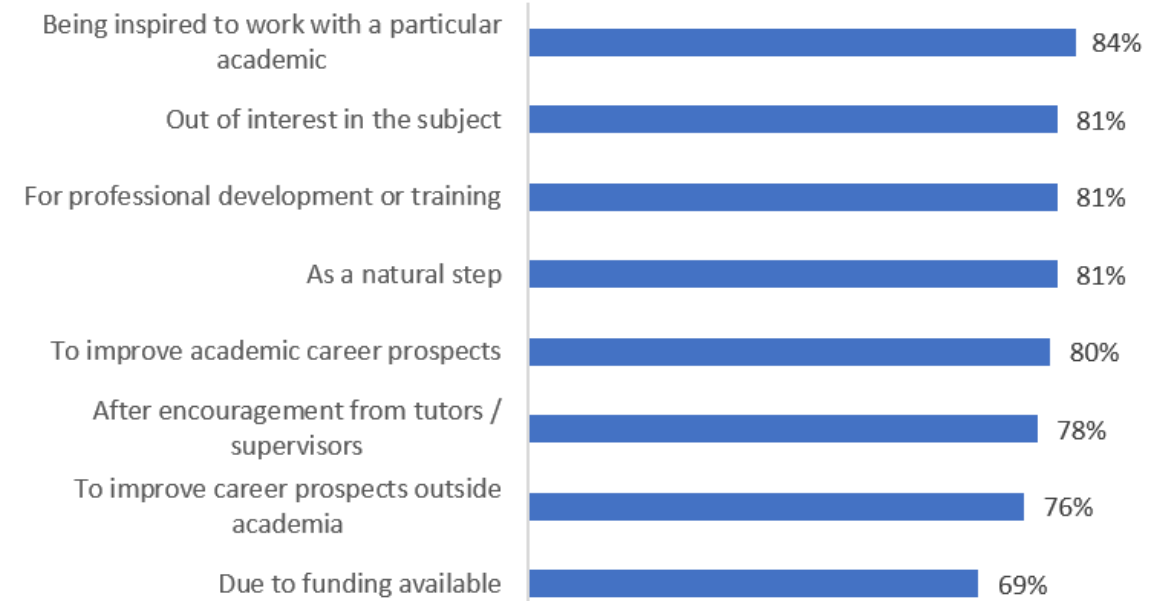


Should I study Ph.D. (philosophiæ doctor)?

Motivation



Satisfaction



Should I study Ph.D. (philosophiæ doctor)?

Finance:

Řádné stipendium – až 10 125 Kč/měs

Zapojení se do projektů GAČR, TAČR, ESA +(10 000 - 40 000 Kč)

Možnost zapojit se do mezinárodních týmů/projektů

Bonusy:

- excelentní výsledky výzkumu a vývoje (publikace v Q1/Q2 časopisech)
- mimořádné stipendium 20 tis. Kč za včasné odevzdání doktorské práce

- Nutnost stáže na zahraniční universitě

Seznam témat:

https://vutbr-my.sharepoint.com/:b:/g/personal/gotthans_vutbr_cz/EVAOJ_Rg-4lBvJj7DbEg-5wB0ieSh-Y0q50o4dw0akeAew?e=bFgv2r

Should I study Ph.D. (philosophiæ doctor)?

Proposed topics:

Microwave and antennas:

6

Signal processing and communication:

7

Circuits:

4

Optics:

2

Digital television systems and video technology:

5

Adversarial machine learning for drone communication

Black box neural network modulator/demodulator

Drone hijacking

UAV Detection and Localization by MIMO radars

Drone is usually small for radars, however their rotors have specific signatures

Volterra - frequency domain

What will be the response of second order non-linear system to

$$x(t) = A \cos(\omega t) = \frac{A}{2} e^{j\omega t} + \frac{A}{2} e^{-j\omega t}$$
$$y(t) = H_2[x_1] + H_2[x_2] + H_2[x_1, x_2] + H_2[x_2, x_1]$$
$$H_2[x_1] = \int_{-\infty}^{\infty} \int_{-\infty}^{\infty} h_2(\tau_1, \tau_2) x_1(t - \tau_1) + x_1(t - \tau_2) d\tau_1 d\tau_2 =$$
$$\left(\frac{A}{2}\right)^2 \int_{-\infty}^{\infty} \int_{-\infty}^{\infty} h_2(\tau_1, \tau_2) e^{j\omega t - \tau_1} e^{j\omega t - \tau_2} d\tau_1 d\tau_2 =$$
$$\left(\frac{A}{2}\right)^2 e^{2j\omega t} \int_{-\infty}^{\infty} \int_{-\infty}^{\infty} h_2(\tau_1, \tau_2) e^{-j\omega\tau_1} e^{-j\omega\tau_2} d\tau_1 d\tau_2$$

$\Psi(-j\omega, -j\omega)$
2D Fourier transform

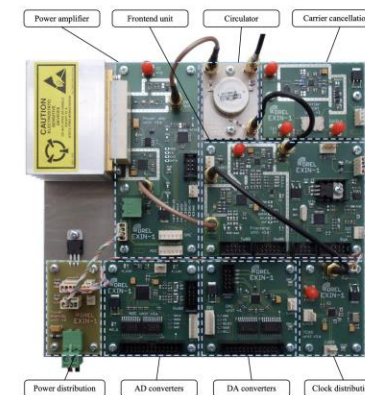
$$H_2[x_2] = \left(\frac{A}{2}\right)^2 e^{2j\omega t} \int_{-\infty}^{\infty} \int_{-\infty}^{\infty} h_2(\tau_1, \tau_2) e^{j\omega\tau_1} e^{j\omega\tau_2} d\tau_1 d\tau_2 = \left(\frac{A}{2}\right)^2 e^{-2j\omega t} \Psi(j\omega, j\omega)$$


Fig. B.1: Testbed with the experimental UHF RFID front end



Can you repeat the part of the stuff
where you said all about the things?