Meeting Recap XIV
November 8, 2017

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Version

- November 8, 2017: V1.

Present at the meeting

- Valentin Besse.
- Vladimir Vlasov.
- Anton Golov.

Progress

Tasks	Status
Figures/Tables	Figures are almost done. We use figures from Rome's presentation.
Summary statements	To be done
Scientific audience	We target PRL
Materials and methods	To be done
Re-evalutate data	To be done
Results	To be done
Discussion/Conclusion	To be done
References	To be done
Introduction	To be done
Title	Acousto-magnonic cavity with exchange magnon in the THz regime
Conclusion paragraph	To be done

Table 1: Sum up of the tasks and the progress. The tasks' division follows the algorithm describe in Fig. 1 of [1]

Agenda

During this meeting we discuss about:

1. progress on the paper.

[1]Author of the report

2. results with anisotropy.

3. questions.

The pad used during the meeting can be found here[2].

1 Progress on the paper

Valentin uploaded 2 new figures. He will add two figures:

- a spectrum for different damping.
- a sketch for the experiment.

After that He will start to work on the theory part. It seems reasonable to think that a part of the theory part will be in the supplementary material. After that he will write on the descriptions of the results.

2 Results with anisotropy

Vladimir worked on the anisotropy in nickel films. He found two type of anisotropy: cubic and uniaxial.

Anton presented his study about the impact of the anisotropy. It changed the excitation of the mode

We should plot the divergence of the dispersion relation for the different anisotropy types.

[2]https://pad.aumbox.net/mypads/?/mypads/group/exchange-magnons-4m3cvuz/pad/view/2017-11-08-meetingsyktyvkar-z2b7v30

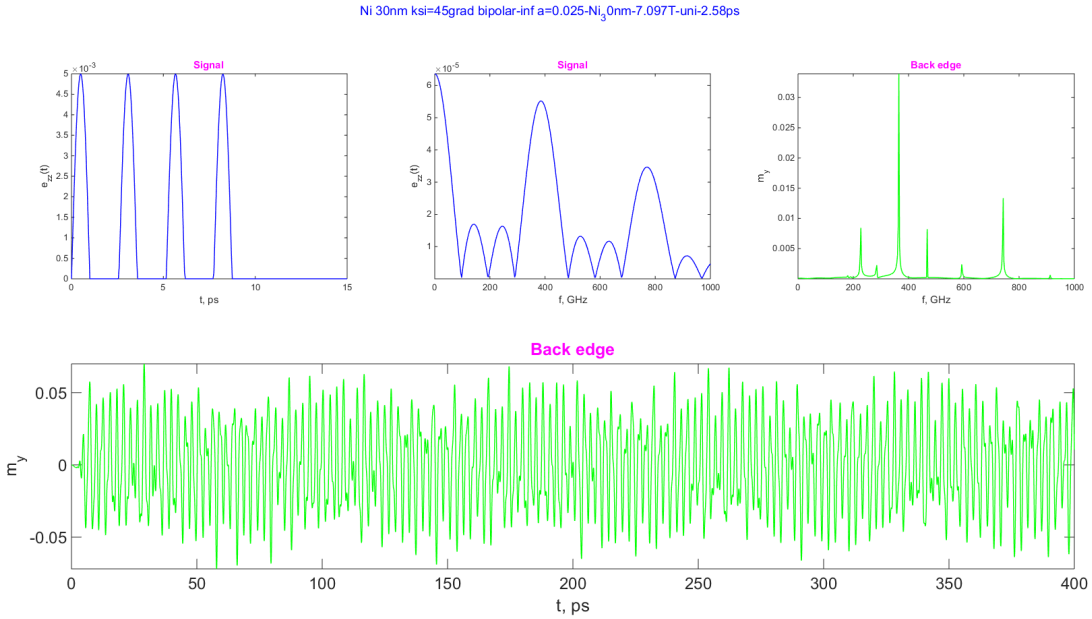

Figure 1: Ni film (30nm) with $H = 7_097$ T exited by 4 unipolar acoustic pulses separated by 2.58 ps without Gilbert damping. It is the case with the cubic anisotropy.

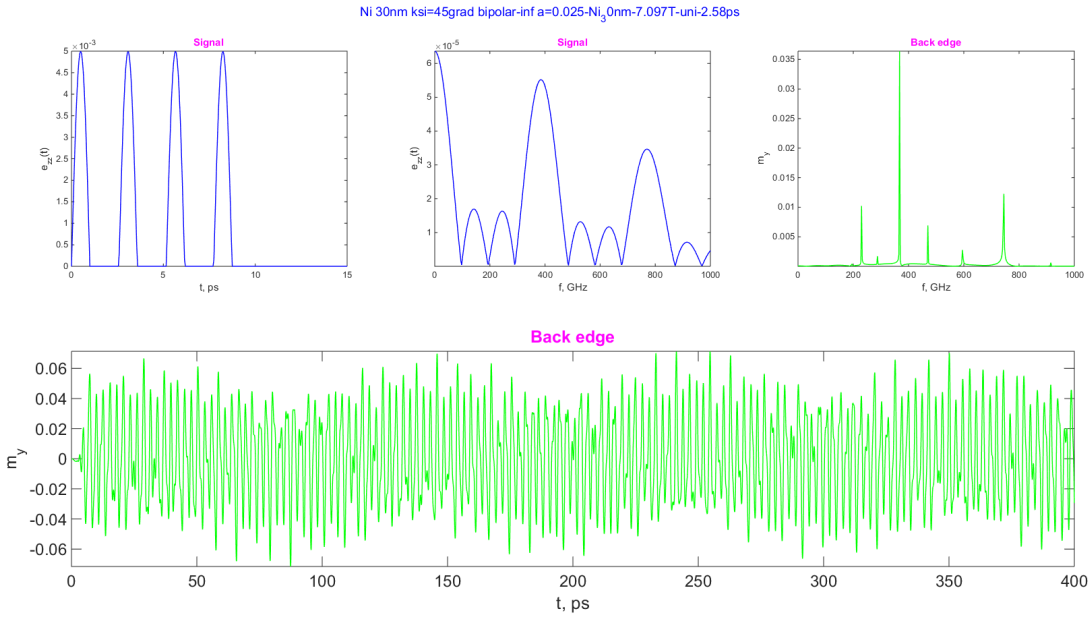

Figure 2: Ni film (30nm) with $H = 7_097$ T exited by 4 unipolar acoustic pulses separated by 2.58 ps without Gilbert damping. It is the case with the uniaxial anisotropy.

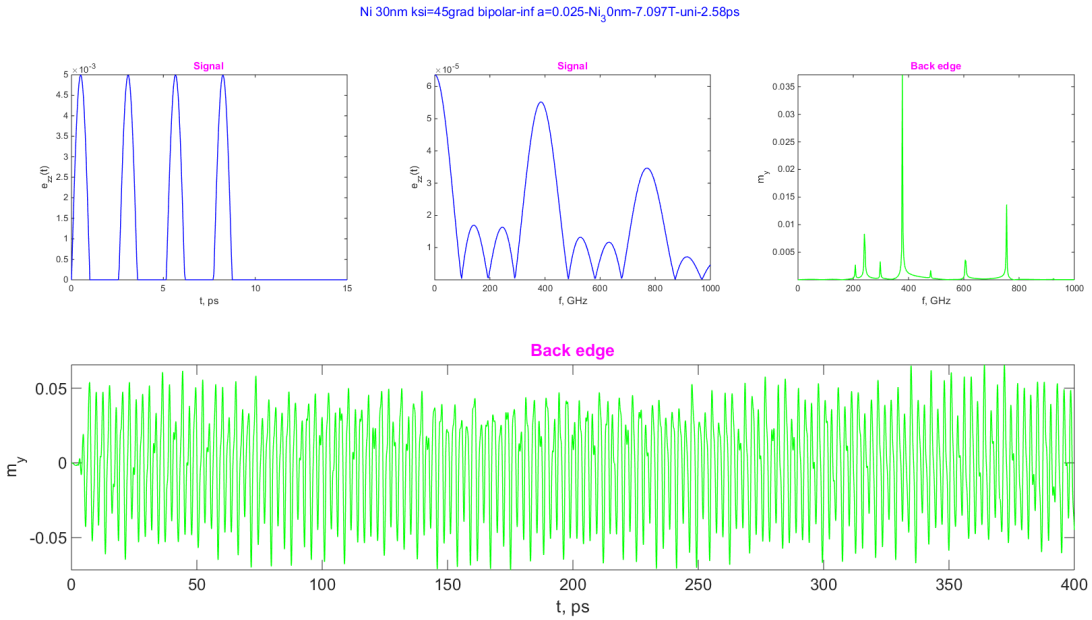

Figure 3: Ni film (30nm) with $H = 7_097$ T exited by 4 unipolar acoustic pulses separeted by 2.58 ps without Gilbert damping. There is no anisotropy.

3 Questions

Alexandr asks:

- could we give realistic units for the precession angle ? Valentin wants to know about the unit of m_x, m_y and m_z.
- we should compare the amplitude of the acoustic pulses and the amplitude of the precession (in realistic units).
- we should compare the value of the constant of the phonon-magnon interactions (b_1) with the electron-phonon interactions.

Answers:

- yes, it is possible to give measurement of the precession angle. The value of $\vec{m}$ (unit magnetization vector) corresponds to the position (x-, y- and z-axis).
- we can measure the amplitude of the precession (in realistic units) by fitting the temporal trace using the definition of the magnetization vector.
- In Ni, the electron-phonon interaction is higher than Co and Fe. We should give number from paper.

Valentin asks:

- b_1 is in J/m^3 (energy density).
- from discussion with Vasily. Also Leonid Kotov think that the magnetoelastic effect is frequency depedant.
- $\partial\vec{m}/\partial t = 0$ at $z = 0,\ L$.

Next meeting

The next meeting will be Monday November 13th at 2:00 pm (CET).

List of abbreviations

Landau-Lifschitz-Gilbert	$\Longrightarrow$	LLG
Ferromagnetic resonance	$\Longrightarrow$	FMR

References

[1] T. R. O'Connor and G. P. Holmquist, "Algorithm for writing a scientific manuscript," *Biochemistry and Molecular Biology Education*, vol. 37, no. 6, pp. 344–348, 2009.