

Faculty of Physics

Quantum Optics, Quantum Nanophysics,
Quantum Information

Dr. Nikolai Kiesel

Boltzmannngasse 5
A-1090 Vienna

T +43 (1) 4277-72534
nikolai.kiesel@univie.ac.at

Letter of Confirmation: Ms. Qian-Ze Zhu

Vienna, 3rd October 2019

To whom it may concern,

With the present letter I confirm that Ms. Qian-Ze Zhu successfully completed an internship at the Aspelmeyer and Kiesel group in Vienna under the supervision of Prof. Nikolai Kiesel and Dr. Mario Ciampini, from the 24.06.2019 to 23.08.2019.

Qian-Ze was tasked to study the problem of the Kramer's turnover of a nanoparticle trapped in a double-well optical potential. The work is aimed toward reconstructing the transition rate between the two wells of a bistable mechanical system as a function of both the damping rate and the asymmetry of the potential.

During her stay, Qian-Ze:

- Extensively researched literature,
- Understood the theoretical model,
- Performed analytical predictions, generalising the model to asymmetric potentials
- Used experimental data to verify the predictions of her model
- Performed simulations of the Langevin equation of the studied system, finding realistic parameters to perform an experiment.

At the end of her internship, she provided an excellent report on her work and presented the results to the group.

Qian-Ze had already some experience in optomechanical systems, and has proven herself to be capable to absorb the literature and deepen her knowledge on the subject. She showed a

significant will to learn, to work independently and in a team and a deep curiosity regarding all the aspects of the work as a researcher.

During her stay, Qian-Ze was capable of overcoming some unforeseen theoretical difficulties, proving to be a dependable student and future scientist. She integrated very well with the group and participated enthusiastically at the social events.

In conclusion, I regard the internship to be extremely successful (100/100). Please do not hesitate to contact me for any further questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "N. Kiesel".

Dr. Nikolai Kiesel