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Walter Schottky Institute
School of Natural Sciences
Technical University of Munich

Optics and Optomechanics of Freely Suspended MoS_2 Monolayers

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Bachelor's Thesis

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Abstract

Thesis template from the ZNN, updated for Biblatex and Biber.

Zusammenfassung

German Abstract

Contents

CHAPTER 1

Introduction

to cite use
autocite{} to reference use
cref{}

CHAPTER 2

Theoretical concepts

In **??** we will talk about theory. We start with lorem ipsum in **??**. Then continue with MoS_2 and WS_2 in **??** and so on.

2.1 Referencing figures

In **??** one can see some nice pictures.
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2.1.1 Stuff with MoS_2 and WS_2

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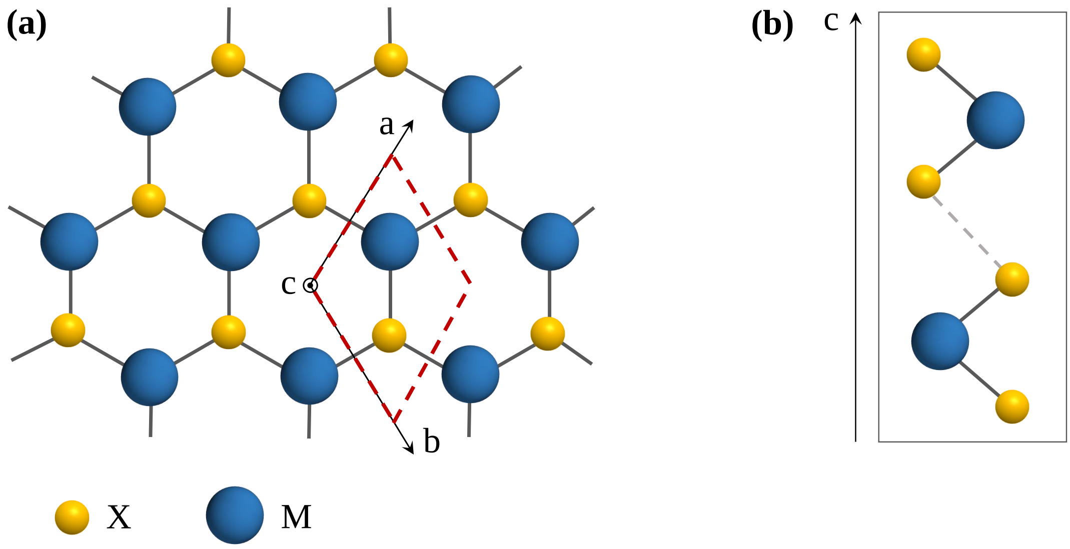

Figure 2.1: **(a)** Nice picture 1 **(b)**Nice picture 2

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2.1.2 Next section

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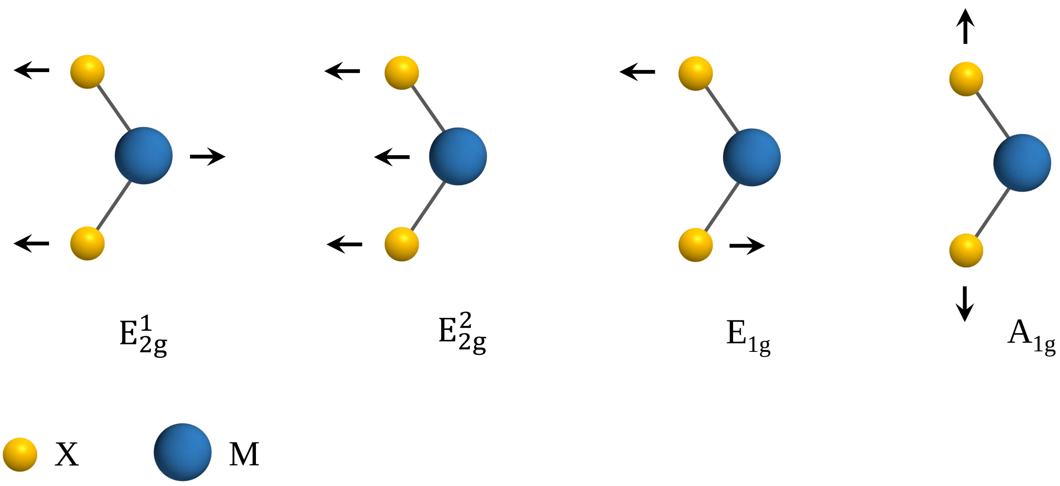

Figure 2.2: Second nice figure: Sketch of the atomic displacement for the Raman active phonon modes at the Γ-point in the monolayer D^1_{3h} symmetry.

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2.2 The second section

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2.2.1 Equations and referencing

In the following we show Equations **??** to **??**. You should look at **??**!

$$\frac{I\left(A^{-}\right)}{I\left(A\right)} = \frac{\Gamma_{\mathrm{A}^{-}} N_{\mathrm{A}^{-}}}{\Gamma_{\mathrm{A}} N_{\mathrm{A}}} \propto \frac{\Gamma_{\mathrm{A}^{-}}}{\Gamma_{\mathrm{A}}} \frac{1}{n_e} \exp\left(\frac{\mathrm{E}_{\mathrm{A}^{-}}}{k_{\mathrm{B}}\mathrm{T}}\right) \tag{2.1}$$

$$\Gamma = A_{1g} \oplus 2A_{2u} \oplus B_{1u} \oplus 2B_{2g} \oplus E_{1g} \oplus 2E_{1u} \oplus E_{2u} \oplus 2E_{2g}. \tag{2.2}$$

$$m^{*}\frac{d^2x}{dt^2} + \frac{m^{*}}{\tau}\frac{dx}{dt} = -eE_0 e^{-i\omega t}. \tag{2.3}$$

$$x(t) = \frac{e}{m^{*}} \frac{1}{\omega(\omega + i\frac{1}{\tau})} E_0 e^{-i\omega t} \tag{2.4}$$

$$\mathbf{P} = \epsilon_0 \chi \mathbf{E} = n_V \mathbf{p}_{\mathrm{el}}, \tag{2.5}$$

$$\varepsilon_r(\omega) \approx 1 - \frac{\omega_p^2}{\omega^2}, \qquad \varepsilon_i(\omega) \approx \frac{\omega_p^2}{\omega^3}\Gamma. \tag{2.6}$$

$$\sigma_{\mathrm{ext}} = \frac{2\pi}{|\mathbf{k}|^2} \sum_{L=1}^{\infty} (2L+1) \mathrm{Re}\left\{a_L + b_L\right\} \tag{2.7}$$

$$\sigma_{\mathrm{sca}} = \frac{2\pi}{|\mathbf{k}|^2} \sum_{L=1}^{\infty} (2L+1)(|a_L|^2 + |b_L|^2) \tag{2.8}$$

$$\sigma_{\mathrm{abs}} = \sigma_{\mathrm{ext}} - \sigma_{\mathrm{sca}} \tag{2.9}$$

We can even cite the equations in the align environment above. Like **??** and **??**

$$\sigma_{\text{ext}} = 12\pi\epsilon_m^{3/2} R^3 \frac{\omega}{c} \frac{\varepsilon_i(\omega)}{[\varepsilon_r(\omega) + 2\epsilon_m]^2 + \varepsilon_i(\omega)^2}, \tag{2.10}$$

2.2.2 Citation

We will cite a lot in a theory chapter, but the best source is [**gross_festkorperphysik_2018**] but of course we cannot forget about [**fox_optical_2010**; **fox_quantum_2006**]!
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CHAPTER 3

Experimental Procedures

CHAPTER 4

Results

CHAPTER 5

Discussion

Discussion

CHAPTER 6

Conclusion and Outlook

6.1 Conclusion

Conclusion

6.2 Outlook

Outlook

APPENDIX A

Code

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this is code
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Acknowledgement

I want to thank:

Tutor for everything.

Professor for nothing.

Eidesstattliche Erklärung

Ich versichere hiermit an Eides statt, dass ich die von mir eingereichte Arbeit bzw. die von mir namentlich gekennzeichneten Teile selbständig verfasst und ausschließlich die angegebenen Hilfsmittel benutzt habe. Die Arbeit wurde bisher in gleicher oder ähnlicher Form in keiner anderen Prüfungsbehörde vorgelegt und auch noch nicht veröffentlicht.

Ort, Datum Unterschrift