



TUM School of Natural Sciences

Technische Universität München

Title in Progress...

with R3B

Tobias Jenegger

Vollständiger Abdruck der von der TUM School of Natural Sciences der Technischen  
Universität München zur Erlangung des akademischen Grades eines

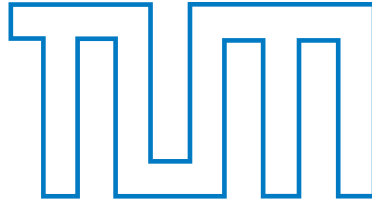
Doktors der Naturwissenschaften (Dr. rer. nat.)

genehmigten Dissertation.

Vorsitz:	TBA
Prüfer*innen der Dissertation:	1. TBA
	2. TBA

Die Dissertation wurde am date bei der Technischen Universität München eingereicht  
und durch die TUM School of Natural Sciences am date angenommen.





TUM School of Natural Sciences

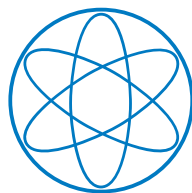
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Tobias Jenegger



Technische Universität München

Fachbereich: Dense and Strange Hadronic Matter (E62)

2023



# Abstract

-you can study to constrain the  $L$  parameter in the EOS and therefore gain profound understanding of the inner structure of NS.

At GSI the  $^{12}\text{C}$  reaction on carbon and plastic was studied. This allows to study the microstopic structure and therefore the composition of nuclear matter and the acting force (nuclear shell model etc) by using the method of QFS.

This qfs method, which offers the possibility to look inside the nucleus can be used thanks to the newly designed calorimeter for the detection of gammas and light charged particles CALIFA for the R3B experiment at GSI.

This work provides an overview of the precise total reaction cross section measurement of  $^{12}\text{C} + ^{12}\text{C}$  collisions for the experiment in inverse kinematics at beam energies from 400 AMeV up to 800 AMeV. As well as looking at the qfs method to extract valuable information of the inner structure of the  $^{12}\text{C}$  nucleus.

-to add: what methods did I use

-impact in the wider context

-limitations and future directions





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