MAGNETIC ORDERING AND EXCHANGE INTERACTIONS IN METALLIC ARSENIDES

Draft of November 11, 2020 at 23 : 36

BY

MANOHAR H. KARIGERASI

DISSERTATION

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy in Materials Science and Engineering
in the Graduate College of the
University of Illinois at Urbana-Champaign, 2021

Urbana, Illinois

Doctoral Committee:

Associate Professor Daniel P. Shoemaker, Chair
Professor David G. Cahill
Professor Jian-Min Zuo
Research Assistant Professor Gregory MacDougall

Abstract

This is a comprehensive study of

Acknowledgments

This project would not have been possible without the support of many people. Many thanks to my adviser, Lawrence T. Strongarm, who read my numerous revisions and helped make some sense of the confusion. Also thanks to my committee members, Reginald Bottoms, Karin Vegas, and Cindy Willy, who offered guidance and support. Thanks to the University of Illinois Graduate College for awarding me a Dissertation Completion Fellowship, providing me with the financial means to complete this project. And finally, thanks to my husband, parents, and numerous friends who endured this long process with me, always offering support and love.

Table of Contents

List of Tables

List of Figures

Chapter 1

Introduction

Chapter 2

Methods

This is a citation to [Walker, 2015] and [Hager and Zhang, 2006].

Chapter 3

Results

Chapter 4

Conclusions

References

[Hager and Zhang, 2006] Hager, W. W. and Zhang, H. (2006). Algorithm 851: CG_DESCENT, a conjugate gradient method with guaranteed descent. *ACM Transactions on Mathematical Software*, 32:113–137.

[Walker, 2015] Walker, S. W. (2015). *The Shape of Things: A Practical Guide to Differential Geometry and the Shape Derivative*. SIAM.

Appendix A

My Appendix