CCE2

1.0

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Chapter 1

Modules Index

1.1 Modules List

Here is a list of all modules with brief descriptions:

build_hamiltonian (This module contains all subroutines necessary to build the Hamiltonian matrix) 7
constant (Defines all physical constants needed for CCE2) 9
read (Reads all input files) 10
system_basis (Defines the vector basis for the spin system considered) 11
type (Defines all variable, array etc. types needed for CCE2) 12

Chapter 2

Data Type Index

2.1 Data Types List

Here are the data types with brief descriptions:

type::basis_def 13

Chapter 3

File Index

3.1 File List

Here is a list of all files with brief descriptions:

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include/read.f90 16
include/type.f90 17
library/build_hamiltonian.f90 18
library/system_basis.f90 19
src/CCE2.f90 20

Chapter 4

Module Documentation

4.1 build_hamiltonian Module Reference

This module contains all subroutines necessary to build the Hamiltonian matrix.

Functions/Subroutines

- subroutine build_diag

  Computes the diagonal part of the free Hamiltonian.

4.1.1 Detailed Description

This module contains all subroutines necessary to build the Hamiltonian matrix.

Author:

Dr. Roland Guichard University College London

4.1.2 Function/Subroutine Documentation

4.1.2.1 subroutine build_hamiltonian::build_diag ()

Computes the diagonal part of the free Hamiltonian.

Author:

Dr. Roland Guichard University College London Computes the Zeeman terms of the Hamiltonian.

Parameters:

← ***basis***

→ **--**

Returns:

H0_diag

Here is the caller graph for this function:

4.2 constant Module Reference

Defines all physical constants needed for CCE2.

Variables

- double precision, parameter pi = 3.141592653589793d0
- double precision, parameter gamma_e = 1.7591d5
- double precision, parameter gamma_n_29Si = 53.1903d0

4.2.1 Detailed Description

Defines all physical constants needed for CCE2.

Author:

Dr. Roland Guichard University College London

4.2.2 Variable Documentation

4.2.2.1 double precision,parameter constant::gamma_e = 1.7591d5

4.2.2.2 double precision,parameter constant::gamma_n_29Si = 53.1903d0

4.2.2.3 double precision,parameter constant::pi = 3.141592653589793d0

4.3 read Module Reference

Reads all input files.

Functions/Subroutines

- subroutine read_basis

  Reads input file basis.inp.

Variables

- character(len=∗), paramete fmt_str)
- character(len=∗), paramete fmt_dbl)

4.3.1 Detailed Description

Reads all input files.

Author:

Dr. Roland Guichard University College London

4.3.2 Function/Subroutine Documentation

4.3.2.1 subroutine read::read_basis ()

Reads input file basis.inp.

Author:

Dr. Roland Guichard University College London Sets all variables for the vector basis of the spin system.

Parameters:

← ***basis.inp***

→ **--**

Returns:

basis

Here is the caller graph for this function:

4.3.3 Variable Documentation

4.3.3.1 character (len=∗),paramete read::fmt_dbl)

4.3.3.2 character (len=∗),paramete read::fmt_str)

4.4 system_basis Module Reference

Defines the vector basis for the spin system considered.

Functions/Subroutines

- subroutine create_basis

  Creates the vector basis.

4.4.1 Detailed Description

Defines the vector basis for the spin system considered.

Author:

Dr. Roland Guichard University College London

4.4.2 Function/Subroutine Documentation

4.4.2.1 subroutine system_basis::create_basis ()

Creates the vector basis.

Author:

Dr. Roland Guichard University College London Flow method (rate of change of position) used by integrator. Compute $\frac{d\lambda}{dt}$, $\frac{d\phi}{dt}$, $\frac{dz}{dt}$

Parameters:

← ***basis***

→ **--**

Returns:

H0_diag

Here is the caller graph for this function:

4.5 type Module Reference

Defines all variable, array etc. types needed for CCE2.

Data Types

- type basis_def

Variables

- integer basis_nb
- double precision, allocatable H0_diag
- type(basis_def), dimension(2) basis

4.5.1 Detailed Description

Defines all variable, array etc. types needed for CCE2.

Author:

Dr. Roland Guichard University College London

4.5.2 Variable Documentation

4.5.2.1 type (basis_def),dimension(2) type::basis

4.5.2.2 integer type::basis_nb

4.5.2.3 double precision,allocatable type::H0_diag

Chapter 5

Data Type Documentation

5.1 type::basis_def Type Reference

Public Attributes

- character(len=20) spin_type
- integer spin_mt
- double precision spin_mag
- double precision, dimension(:), allocatable vector

5.1.1 Member Data Documentation

5.1.1.1 double precision type::basis_def::spin_mag

5.1.1.2 integer type::basis_def::spin_mt

5.1.1.3 character (len=20) type::basis_def::spin_type

5.1.1.4 double precision,dimension(:),allocatable type::basis_def::vector

The documentation for this type was generated from the following file:

- include/type.f90

Chapter 6

File Documentation

6.1 include/constant.f90 File Reference

Modules

- module constant

  Defines all physical constants needed for CCE2.

Variables

- double precision, parameter constant::pi = 3.141592653589793d0
- double precision, parameter constant::gamma_e = 1.7591d5
- double precision, parameter constant::gamma_n_29Si = 53.1903d0

6.2 include/read.f90 File Reference

Modules

- module read

  Reads all input files.

Functions/Subroutines

- subroutine read::read_basis

  Reads input file basis.inp.

Variables

- character(len=∗), paramete read::fmt_str)
- character(len=∗), paramete read::fmt_dbl)

6.3 include/type.f90 File Reference

Data Types

- type type::basis_def

Modules

- module type

  Defines all variable, array etc. types needed for CCE2.

Variables

- integer type::basis_nb
- double precision, allocatable type::H0_diag
- type(basis_def), dimension(2) type::basis

6.4 library/build_hamiltonian.f90 File Reference

Modules

- module build_hamiltonian

  This module contains all subroutines necessary to build the Hamiltonian matrix.

Functions/Subroutines

- subroutine build_hamiltonian::build_diag

  Computes the diagonal part of the free Hamiltonian.

6.5 library/system_basis.f90 File Reference

Modules

- module system_basis

  Defines the vector basis for the spin system considered.

Functions/Subroutines

- subroutine system_basis::create_basis

  Creates the vector basis.

6.6 src/CCE2.f90 File Reference

Functions/Subroutines

- program CCE2

  This part of the CCE2 code is the main.

6.6.1 Function Documentation

6.6.1.1 program CCE2 ()

This part of the CCE2 code is the main.

Author:

Dr. Roland Guichard University College London

Here is the call graph for this function:

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