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# **ABACUS-module\_ORB**

***Release 0.1***

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## ORB API

### 1.1 Class Hierarchy

### 1.2 File Hierarchy

### 1.3 Full API

#### 1.3.1 Namespaces

##### Namespace conf

###### Contents

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##### Variables

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- *Variable conf::using\_rtd\_theme*
- *Variable conf::websupport2\_base\_url*
- *Variable conf::websupport2\_static\_url*

## Namespace std

### 1.3.2 Classes and Structs

#### Class LCAO\_Orbitals

- Defined in file \_\_home\_docs\_checkouts\_readthedocs.org\_user\_builds\_myabacus\_checkouts\_latest\_ABACUS.develop\_source\_mo

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## Class Documentation

```
class LCAO_Orbitals
    advices for reconstructions:
each set of orbitals should have: lmax, dr, dk, rmax, lmax, etc.
the orbitals include : NAO, non-local projectors, descriptors, etc.
mohan note 2021-02-13
```

### Public Functions

```
LCAO_Orbitals()
```

```
~LCAO_Orbitals()
```

```
void Read_Orbitals(ofstream &ofs_in, const int &nype_in, const int &lmax_in, const int &out_descriptor,
                    const int &out_r_matrix, const bool &force_flag, const int &my_rank)
```

```
void Read_PA0(ofstream &ofs_in, const int &it, const bool &force_flag, const int &my_rank)
```

```
void Set_NonLocal(const int &it, int &n_projectors)
    in order to get rid of the .NONLOCAL file.
```

```
void Read_NonLocal(const int &it, int &n_projectors, const int &my_rank)
    read in the NONLOCAL projector from file.
```

```
void Read_Descriptor(ofstream &ofs_in, const bool &force_flag, const int &my_rank)
```

```
inline const double &get_ecutwfc(void) const
```

```
inline const int &get_kmesh(void) const
```

```
inline const double &get_dk(void) const
```

```
inline const double &get_dr(void) const
```

```
inline const double &get_Rmax(void) const
```

```
inline const int &get_lmax(void) const
```

```
inline const int &get_lmax_d(void) const
    lmax of descriptor basis
```

```
inline const int &get_nchimax(void) const
```

```
inline const int &get_nchimax_d(void) const
    nchimax of descriptor basis
```

```
inline const int &get_ntype(void) const  
  
inline const double &get_dr_uniform(void) const  
  
inline const double &get_rcutmax_Phi(void) const  
  
inline const double &get_rcutmax_Beta(void) const
```

## Public Members

*Numerical\_Orbital* \***Phi**  
numerical atomic orbitals

*Numerical\_Nonlocal* \***Beta**  
nonlocal projectors (1-dimension array)

*Numerical\_Orbital* \***Alpha**  
descriptor bases, saved as one-type atom orbital

```
double ecutwfc  
double dk  
double dR  
double Rmax  
int *nproj  
int nprojmax  
double dr_uniform  
bool read_in_flag  
std::vector<string> orbital_file  
std::vector<string> nonlocal_file  
string descriptor_file
```

## Class Numerical\_Nonlocal

- Defined in file \_\_home\_docs\_checkouts\_readthedocs.org\_user\_builds\_myabacus\_checkouts\_latest\_ABACUS.develop\_source\_mo

## Class Documentation

```
class Numerical_Nonlocal
CLASS
Note : contain nonlocal ps(:pseudopotential) information about atoms
Feature : set and store information about ps infomation related to atoms
AUTHOR : liaochen
DATE : 2008-03-04
```

### Public Functions

```
Numerical_Nonlocal()
```

```
~Numerical_Nonlocal()
```

```
inline const int &getLmax() const
```

```
inline const int &getType() const
```

```
inline const string &getLabel() const
```

```
inline const string &getType_ps() const
```

```
void set_type_info(const int &type_in, const string &label_in, const string &type_ps_in, const int
&lmax_in, const int &nproj_in, const Numerical_Nonlocal_Lm *ps_orbital_in)
```

```
inline const double &get_rcut_max(void) const
```

### Public Members

```
Numerical_Nonlocal_Lm *Proj
```

length: nproj(only store radial function )

## Class Numerical\_Nonlocal\_Lm

- Defined in file \_\_home\_docs\_checkouts\_readthedocs.org\_user\_builds\_myabacus\_checkouts\_latest\_ABACUS.develop\_source\_mo

## Class Documentation

class **Numerical\_Nonlocal\_Lm**  
CLASS

Note : contain information about each projector all features of projector's shape

AUTHOR : liaochen

DATE : 2008-03-04

### Public Functions

**Numerical\_Nonlocal\_Lm()**

use Polynomial\_Interpolation\_xy, Spherical\_Bessel use SplineD2

**~Numerical\_Nonlocal\_Lm()**

inline const int &**getL()** const

inline const int &**getType()** const

inline const double &**getRcut()** const

inline const double \***getRadial()** const

inline const double &**getRadial**(const int &ir) const

inline const double \***getBeta\_r()** const

inline const double &**getBeta\_r**(const int &ir) const

inline const double &**getDk()** const

inline const double \***getKpoint()** const

inline const double &**getKpoint**(const int &ik) const

inline const double \***getBeta\_k()** const

inline const double &**getBeta\_k**(const int &ik) const

*Numerical\_Nonlocal\_Lm* &**operator=**=(const *Numerical\_Nonlocal\_Lm* &nol)

---

```
void set_NL_proj(const string &label, const int &index_atom_type_in, const int &angular_momentum_l_in,
                 const int &nr_in, const double *rab_in, const double *r_radial_in, const double
                 *beta_r_in, const int &nk_in, const double &dk_in, const double &dr_uniform_in)
```

```
void plot(const int &my_rank) const
```

## Public Members

```
double *beta_uniform
double *dbeta_uniform
int nr_uniform
double dr_uniform
```

## Class Numerical\_Orbital

- Defined in file \_\_home\_docs\_checkouts\_readthedocs.org\_user\_builds\_myabacus\_checkouts\_latest\_ABACUS.develop\_source\_mo

## Class Documentation

```
class Numerical_Orbital
CLASS Num_Orbital
```

Note : contain information about atoms

Feature : set and store information about atoms

## Public Functions

```
Numerical_Orbital()
```

```
~Numerical_Orbital()
```

```
inline const int &getLmax() const
```

```
inline const double &getRcut() const
```

```
inline const int &getType() const
```

```
inline const int &getTotal_nchi() const
```

```
inline const int &getNchi(const int l) const
```

```
inline const string &getLabel() const
```

```
inline const Numerical_Orbital_Lm &PhiLN(const int &L, const int &N) const  
  
void set_orbital_info(const int &type_in, const string &label_in, const int &lmax_in, const int *nchi_in,  
                      const int &total_nchi)  
    set information about Numerical Orbital
```

### Public Static Functions

```
static inline double &get_distance()  
    about the distance between two atoms.  
  
static inline double getX()  
  
static inline double getY()  
  
static inline double getZ()  
  
static inline Vector3<double> &getR1()  
  
static inline Vector3<double> &getR2()  
  
static inline Vector3<double> &getdR()  
  
static inline void set_position(const Vector3<double> R1_in, const Vector3<double> R2_in)
```

### Class Numerical\_Orbital\_Lm

- Defined in file \_\_home\_docs\_checkouts\_readthedocs.org\_user\_builds\_myabacus\_checkouts\_latest\_ABACUS.develop\_source\_mo

### Class Documentation

```
class Numerical_Orbital_Lm  
CLASS Num_orbital_lm
```

Note : contain information about each orbital : psi(l,m) all features of orbital's shape

### Public Types

```
enum Psi_Type  
    Values:  
  
        enumerator Psi  
        enumerator Psif  
        enumerator Psik
```

---

enumerator **Psik2**

### Public Functions

**Numerical\_Orbital\_Lm()**

**~Numerical\_Orbital\_Lm()**

```
void set_orbital_info(const string &label_in, const int &index_atom_type_in, const int
                     &angular_momentum_l_in, const int &index_chi_in, const int &nr_in, const double
                     *rab_in, const double *r_radial_in, const Psi_Type &psi_type, const double
                     *psi_in, const int &nk_in, const double &dk_in, const double &dr_uniform, bool
                     flag_plot, bool flag_sbpool, const bool &force_flag)
```

EXPLAIN : set information about *Numerical\_Orbital\_Lm*.

inline const string &**getLabel**() const

inline const int &**getType**() const

inline const int &**getL**() const

inline const int &**getChi**() const

inline const double \***getPsiuniform**() const

inline const double \***getDpsiuniform**() const

inline const int &**getNruniform**() const

inline const double &**getDruniform**() const

inline const int &**getNr**() const

inline const int &**getNk**() const

inline const double &**getRcut**() const

inline const double &**getKcut**() const

inline const double \***getRadial**() const

inline const vector<double> &**get\_r\_radial**() const

inline const double &**getRadial**(const int ir) const

```
inline const double *getRab() const  
  
inline const vector<double> &get_rab() const  
  
inline const double &getRab(const int ir) const  
  
inline const double &getDk() const  
  
inline const double *getKpoint() const  
  
inline const double &getKpoint(const int ik) const  
  
inline const vector<double> &get_k_radial() const  
  
inline const double *getPsi() const  
  
inline const double &getPsi(const int ir) const  
  
inline const vector<double> &get_psi() const  
  
inline const double *getPsi_r() const  
  
inline const double &getPsi_r(const int ir) const  
  
inline const double *getPsif() const  
  
inline const double &getPsif(const int ik) const  
  
inline const vector<double> &get_psif() const  
  
inline const double *getPsi_k() const  
  
inline const double &getPsi_k(const int ik) const  
  
inline const vector<double> &get_psi_k() const  
  
inline const double *getPsi_k2() const  
  
inline const double &getPsi_k2(const int ik) const  
  
inline const vector<double> &get_psi_k2() const
```

## Public Members

```
vector<double> psi_uniform
vector<double> dpsi_uniform
int nr_uniform
double dr_uniform
double zty
the value of psi at 0.
```

## Class ORB\_control

- Defined in file \_\_home\_docs\_checkouts\_readthedocs.org\_user\_builds\_myabacus\_checkouts\_latest\_ABACUS.develop\_source\_mod

## Class Documentation

class **ORB\_control**

### Public Functions

**ORB\_control()**

**~ORB\_control()**

```
void set_orb_tables(ofstream &ofs_in, ORB_gen_tables &OGT, LCAO_Orbitals &orb, const int &nype,
const int &lmax, const double &lcao_ecut_in, const double &lcao_dk_in, const
double &lcao_dr_in, const double &lcao_rmax_in, const double &lat0, const int
&out_descriptor, const int &out_r_matrix, const int &Lmax_exx, const bool
&force_flag, const int &my_rank)
```

Generate the S(overlap),T,NL matrix.

#### Parameters

- nype** – number of species, mohan add 2021-04-26
- lmax** – value of Lmax for basis, mohan add 2021-04-26

```
void clear_after_ions(ORB_gen_tables &OGT, LCAO_Orbitals &orb, const int &out_descriptor)
```

**Class ORB\_gaunt\_table**

- Defined in file \_\_home\_docs\_checkouts\_readthedocs.org\_user\_builds\_myabacus\_checkouts\_latest\_ABACUS.develop\_source\_mo

**Class Documentation**

```
class ORB_gaunt_table
```

**Public Functions**

```
ORB_gaunt_table()
```

```
~ORB_gaunt_table()
```

```
void init_Gaunt_CH(const int &Lmax)
```

Method 2: using Wigner 3j symbols  $Y(l_1, m_1), Y(l_2, m_2), Y(L, M)$

```
double Get_Gaunt_CH(const int &l1, const int &m1, const int &l2, const int &m2, const int &l3, const int  
&m3)
```

```
double Get_Gaunt_SH(const int &l1, const int &mm1, const int &l2, const int &mm2, const int &l3, const int  
&mm3)
```

M defined here are restricted within 0 to  $2l+1$

should be transformed first

Input value, m1, m2, m3 are restricted within 0 to  $2l+1$ , and should be transformed first.

```
double Calc_Gaunt_CH(const int &l1, const int &m1, const int &l2, const int &m2, const int &l3, const int  
&m3)
```

```
void init_Ylm_Gaunt(const int &lmax, const double &s1, const double &e1, const double &s2, const double  
&e2)
```

(1) Make Ylm\_Gaunt Table.

```
double Cal_Gaunt_single(const int &l1, const int &m1, const int &l2, const int &m2, const int &l, const int  
&m, const double &s1, const double &e1, const double &s2, const double &e2)
```

(2) Use Ylm\_Gaunt to calculate Gaunt Coefficinets element

```
void init_Gaunt(const int &lmax)
```

(3) Make the whole Gaunt Coefficients table

## Public Members

realArray **Gaunt\_Coefficients**  
 MEthod 2  
 Directly Calculate integral of  $S(l_1, m_1), S(l_2, m_2), S(L, M)$

## Public Static Functions

static int **get\_lm\_index**(const int l, const int m)

static int **Index\_M**(const int &m)

## Class ORB\_gen\_tables

- Defined in file \_\_home\_docs\_checkouts\_readthedocs.org\_user\_builds\_myabacus\_checkouts\_latest\_ABACUS.develop\_source\_mod

## Class Documentation

class **ORB\_gen\_tables**  
 used to be ‘Use\_Overlap\_Table’, now the name is ‘*ORB\_gen\_tables*’

### Public Functions

**ORB\_gen\_tables()**

**~ORB\_gen\_tables()**

void **gen\_tables**(ofstream &ofs\_in, const int &job0, *LCAO\_Orbitals* &orb, const int &Lmax\_exx, const int &out\_descriptor)  
 call in hamilt\_linear::init\_before\_ions.

**Parameters** **out\_descriptor** – whether to generate descriptors

inline void **set\_unit**(const double &v)

void **snap\_psipsi**(double olm[], const int &job, const char &dtype, const Vector3<double> &R1, const int &I1, const int &l1, const int &m1, const int &n1, const Vector3<double> &R2, const int &I2, const int &l2, const int &m2, const int &n2, const int &nspin, complex<double> \*olm1 = NULL) const

### Parameters

- job** – 0 for matrix element of either S or T, 1 for its derivatives
- dtype** – derivative type, ‘S’ for overlap, ‘T’ for kinetic energy, ‘D’ for descriptor in deepks

```
void snap_psibeta(double nlm[], const int &job, const Vector3<double> &R1, const int &I1, const int &l1,
const int &m1, const int &n1, const Vector3<double> &R2, const int &I2, const int &l2,
const int &m2, const int &n2, const Vector3<double> &Rnl, const int &type, const
matrix &dion, const int &nspin, const ComplexArray &d_so, const int &count_soc, int
*index1_soc, int *index2_soc, const int &nproj_in, complex<double> *nlm1 = NULL,
const int is = 0) const
```

**Parameters** **job** – job = 0 for vnl matrix elements, job = 1 for its derivatives

## Public Members

### *ORB\_table\_phi* **MOT**

set as public because in hamilt\_linear, we need to destroy the tables: SR,TR,NR after ionic optimization is done.

### *ORB\_table\_beta* **tbeta**

### *ORB\_table\_alpha* **talpha**

if we want to add table for descriptors, we should consider here mohan 2021-02-09

## Friends

```
friend class ORB_control
```

## Class **ORB\_table\_alpha**

- Defined in file \_\_home\_docs\_checkouts\_readthedocs.org\_user\_builds\_myabacus\_checkouts\_latest\_ABACUS.develop\_source\_mo

## Class Documentation

```
class ORB_table_alpha
```

### Public Functions

```
ORB_table_alpha()
```

```
~ORB_table_alpha()
```

```
void allocate(const int &ntype, const int &lmax_in, const int &kmesh_in, const double &Rmax_in, const
double &dR_in, const double &dk_in)
```

```
void init_DS_Opair(void)
O stands for orbitals.
```

```
void init_DS_2Lplus1(void)
```

---

```
void init_Table_Alpha(Sph_Bessel_Recursive::D2 *pSB)

void Destroy_Table_Alpha(void)
```

### Public Members

```
double *****Table_DSR
    overlap between lcao basis phi and descriptor basis alpha

bool destroy_nr
IntArray DS_Opair
int *DS_2Lplus1
int Rmesh
int ntype
int lmax
```

### Public Static Functions

```
static int get_rmesh(const double &R1, const double &R2)
```

### Public Static Attributes

```
static double dr = -1.0
```

## Class ORB\_table\_beta

- Defined in file \_\_home\_docs\_checkouts\_readthedocs.org\_user\_builds\_myabacus\_checkouts\_latest\_ABACUS.develop\_source\_mo

### Class Documentation

```
class ORB_table_beta
```

### Public Functions

```
ORB_table_beta()

~ORB_table_beta()
```

```
void allocate(const int &ntype, const int &lmax_in, const int &kmesh_in, const double &Rmax_in, const
    double &dR_in, const double &dk_in)
```

```
void init_NL_Tpair(void)
    NL stands for ‘nonlocal’, T stands for atom type. O stands for orbitals.
void init_NL_Opair(LCAO_Orbitals &orb)

void init_Table_Beta(Sph_Bessel_Recursive::D2 *pSB)

void Destroy_Table_Beta(LCAO_Orbitals &orb)
```

### Public Members

```
double *****Table_NR
bool destroy_nr
int NL_ntpairs
IntArray NL_Tpair
IntArray NL_Opair
IntArray NL_L2plus1
int Rmesh
```

### Public Static Functions

```
static int get_rmesh(const double &R1, const double &R2)
```

### Public Static Attributes

```
static double dr = -1.0
```

## Class ORB\_table\_phi

- Defined in file \_\_home\_docs\_checkouts\_readthedocs.org\_user\_builds\_myabacus\_checkouts\_latest\_ABACUS.develop\_source\_mo

### Class Documentation

```
class ORB_table_phi
```

## Public Functions

`ORB_table_phi()`

`~ORB_table_phi()`

`void allocate(const int &ntype, const int &lmax_in, const int &kmesh_in, const double &Rmax_in, const double &dR_in, const double &dk_in)`

### Parameters

- `ntype` – number of atom types
- `lmax_in` – max L used to calculate overlap
- `kmesh_in` – kpoints, for integration in k space
- `Rmax_in` – max value of radial table
- `dR_in` – delta R, for making radial table
- `dk_in` – delta k, for integration in k space

`void init_Table(const int &job, LCAO_Orbitals &orb)`

`void Destroy_Table(LCAO_Orbitals &orb)`

`void init_Lmax(const int orb_num, const int mode, int &Lmax_used, int &Lmax, const int &Lmax_exx)`  
`const`  
make table of Spherical bessel

Sph\_Bes : jlx[kmesh][Rmesh][L], L should be 2\*Lmax, which is max L of all type

`void init_Table_Spherical_Bessel(const int orb_num, const int mode, int &Lmax_used, int &Lmax,`  
`const int &Lmax_exx)`

`void init_OV_Tpair(LCAO_Orbitals &orb)`

make the index, in order to get the element from Table\_SR and Table\_TR quickly. OV stands for ‘overlap’

T stands for atom type.

`void init_OV_Opair(LCAO_Orbitals &orb)`

O stands for orbitals.

`void cal_ST_Phi12_R(const int &job, const int &l, const Numerical_Orbital_Lm &n1, const`  
`Numerical_Orbital_Lm &n2, const int &rmesh, double *rs, double *drs) const`

`void cal_ST_Phi12_R(const int &job, const int &l, const Numerical_Orbital_Lm &n1, const`  
`Numerical_Orbital_Lm &n2, const set<size_t> &radials, double *rs, double *drs) const`

### Public Members

```
double *****Table_SR  
Five dimension:  
(1) 0: normal (S(R)) ; 1: derivative( dS/dR )  
(2) pairs type number.  
(3) pairs chi  
(4) Max angular momentum: L.  
(5) Distance between atoms: R.
```

```
double *****Table_TR  
bool destroy_sr  
bool destroy_tr  
Sph_Bessel_Recursive::D2 *pSB = nullptr  
int OV_nTpairs  
IntArray OV_Tpair  
IntArray OV_Opair  
IntArray OV_L2plus1  
int Rmesh
```

### Public Static Functions

```
static int get_rmesh(const double &R1, const double &R2)
```

### Public Static Attributes

```
static double dr = -1.0
```

## 1.3.3 Functions

### Function calculate

- Defined in file \_\_home\_docs\_checkouts\_readthedocs.org\_user\_builds\_myabacus\_checkouts\_latest\_ABACUS.develop\_source\_mod

## Function Documentation

**Warning:** doxygenfunction: Cannot find function “calculate” in doxygen xml output for project “ABACUS-module\_ORB” from directory: ../../doxygen/xml/

### Function main

- Defined in file \_\_home\_docs\_checkouts\_readthedocs.org\_user\_builds\_myabacus\_checkouts\_latest\_ABACUS.develop\_source\_mod

## Function Documentation

**Warning:** doxygenfunction: Cannot find function “main” in doxygen xml output for project “ABACUS-module\_ORB” from directory: ../../doxygen/xml/

### 1.3.4 Variables

#### Variable conf::author

- Defined in file\_source\_conf.py

#### Variable Documentation

```
conf.author = 'mohan'
```

#### Variable conf::breathe\_default\_project

- Defined in file\_source\_conf.py

#### Variable Documentation

```
conf.breathe_default_project = "ABACUS-module_ORB"
```

#### Variable conf::breathe\_projects

- Defined in file\_source\_conf.py

### **Variable Documentation**

```
conf.breathe_projects = { "ABACUS-module_ORB": ".../doxygen/xml/" }
```

### **Variable conf::chinese**

- Defined in file\_source\_conf.py

### **Variable Documentation**

```
conf.chinese = any([language_user in ('zh_CN', 'zh_TW'), project_language in ('zh_CN', 'zh_TW'),])
```

### **Variable conf::context**

- Defined in file\_source\_conf.py

### **Variable Documentation**

```
conf.context
```

### **Variable conf::copyright**

- Defined in file\_source\_conf.py

### **Variable Documentation**

```
conf.copyright = '2021, x'
```

### **Variable conf::exclude\_patterns**

- Defined in file\_source\_conf.py

### **Variable Documentation**

```
conf.exclude_patterns = []
```

### Variable conf::exhale\_args

- Defined in file\_source\_conf.py

#### Variable Documentation

```
conf.exhale_args = {# These arguments are required"containmentFolder":  
    "./ORB_api","rootFileName": "library_root.rst","rootFileTitle": "ORB  
API","doxygenStripFromPath": "...",# Suggested optional arguments"createTreeView":  
True,# TIP: if using the sphinx-bootstrap-theme, you need# "treeViewIsBootstrap":  
True,"exhaleExecutesDoxygen": True,"exhaleDoxygenStdin": "INPUT = ../../.."}
```

### Variable conf::extensions

- Defined in file\_source\_conf.py

#### Variable Documentation

```
conf.extensions = [ 'sphinx.ext.todo', 'breathe', 'exhale', 'sphinx.ext.mathjax',  
"sphinx_rtd_theme", 'myst_parser']
```

### Variable conf::highlight\_language

- Defined in file\_source\_conf.py

#### Variable Documentation

```
conf.highlight_language = 'cpp'
```

### Variable conf::html\_baseurl

- Defined in file\_source\_conf.py

#### Variable Documentation

```
conf.html_baseurl = context['canonical_url']
```

**Variable conf::html\_context**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.html_context = context
```

**Variable conf::html\_static\_path**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.html_static_path = ['_static']
```

**Variable conf::html\_style**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.html_style = None
```

**Variable conf::html\_theme**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.html_theme = "sphinx_rtd_theme"
```

**Variable conf::html\_theme\_options**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.html_theme_options = {}
```

**Variable conf::html\_theme\_path**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.html_theme_path = [theme.get_html_theme_path()]
```

**Variable conf::japanese**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.japanese = any([language_user == 'ja', project_language == 'ja',])
```

**Variable conf::language\_user**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.language_user = globals().get('language', None)
```

**Variable conf::latex\_elements**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.latex_elements = latex_elements_user or latex_elements_rtd
```

**Variable conf::latex\_elements\_rtd**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.latex_elements_rtd = {'preamble': '\\usepackage[UTF8]{ctex}\\n',}
```

**Variable conf::latex\_elements\_user**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.latex_elements_user = globals().get('latex_elements', None)
```

**Variable conf::latex\_engine**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.latex_engine = latex_engine_user or 'xelatex'
```

**Variable conf::latex\_engine\_user**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.latex_engine_user = globals().get('latex_engine', None)
```

**Variable conf::latex\_use\_xindy**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.latex_use_xindy = False
```

**Variable conf::primary\_domain**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.primary_domain = 'cpp'
```

**Variable conf::project**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.project = 'ABACUS-module_ORB'
```

**Variable conf::project\_language**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.project_language = 'en'
```

**Variable conf::PY3**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.PY3 = 3
```

**Variable conf::readthedocs\_build\_url**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.readthedocs_build_url = 'https://readthedocs.org/projects/myabacus/builds/14216766/'
```

**Variable conf::readthedocs\_vcs\_url**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.readthedocs_vcs_url = 'None'
```

**Variable conf::release**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.release = '0.1'
```

**Variable conf::string\_types**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.string_types = str if PY3 else basestring
```

**Variable conf::SUFFIX**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.SUFFIX = source_suffix
```

**Variable conf::templates\_path**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.templates_path = ['_templates']
```

**Variable conf::theme**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.theme = importlib.import_module('sphinx_rtd_theme')
```

**Variable conf::using\_rtd\_theme**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.using_rtd_theme = (('html_theme' in globals() and html_theme in ['default']) and#  
Allow people to bail with a hack of having an html_style 'html_style' not in globals() or  
'html_theme' not in globals())
```

**Variable conf::websupport2\_base\_url**

- Defined in file\_source\_conf.py

**Variable Documentation**

```
conf.websupport2_base_url = 'https://readthedocs.org/websupport'
```

### **Variable conf::websupport2\_static\_url**

- Defined in file\_source\_conf.py

#### **Variable Documentation**

```
conf.websupport2_static_url = 'https://assets.readthedocs.org/static/'
```

### **Variable ORB**

- Defined in file\_\_home\_docs\_checkouts\_readthedocs.org\_user\_builds\_myabacus\_checkouts\_latest\_ABACUS.develop\_source\_mo

#### **Variable Documentation**

##### *LCAO\_Orbitals* ORB

PLEASE avoid using ‘ORB’ as global variable.

PLEASE avoid using ‘ORB’ as global variable

mohan note 2021 - 03 - 23

### **Variable ORB**

- Defined in file\_\_home\_docs\_checkouts\_readthedocs.org\_user\_builds\_myabacus\_checkouts\_latest\_ABACUS.develop\_source\_mo

#### **Variable Documentation**

##### *LCAO\_Orbitals* ORB

PLEASE avoid using ‘ORB’ as global variable.

PLEASE avoid using ‘ORB’ as global variable

mohan note 2021 - 03 - 23

### **Variable UOT**

- Defined in file\_\_home\_docs\_checkouts\_readthedocs.org\_user\_builds\_myabacus\_checkouts\_latest\_ABACUS.develop\_source\_mo

#### **Variable Documentation**

##### *ORB\_gen\_tables* UOT

here is a member of *ORB\_gen\_tables* class

PLEASE try to get rid of UOT, which is a global variable mohan add 2021-03-30

## **Variable UOT**

- Defined in file \_\_home\_docs\_checkouts\_readthedocs.org\_user\_builds\_myabacus\_checkouts\_latest\_ABACUS.develop\_source\_mo

## **Variable Documentation**

### *ORB\_gen\_tables* **UOT**

here is a member of *ORB\_gen\_tables* class

PLEASE try to get rid of UOT, which is a global variable mohan add 2021-03-30



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TWO**

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