XNLO - UPPE

1.3.0

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2.1 File List

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Class Documentation

3.1 capillary_fibre Class Reference

`#include <capillary_fibre.hpp>`

Public Member Functions

- capillary_fibre (double Z_, grid_rkr &rkr_, grid_tw &tw_, physics_textbook &physics_, maths_textbook &maths_)

Public Attributes

- ArrayXXcd gamma
- double Z
- double R
- double n_glass

3.1.1 Detailed Description

Originally created by Patrick Anderson. Modified by Samuel Senior on 10/03/2017. "capillary_fibre" describes the dimensions and dispersion properties of a dielectric capillary type fibre.

3.1.2 Constructor & Destructor Documentation

3.1.2.1 capillary_fibre::capillary_fibre (double *Z_*, grid_rkr & *rkr_*, grid_tw & *tw_*, physics_textbook & *physics_*, maths_textbook & *maths_*)

Constructor

3.1.3 Member Data Documentation

3.1.3.1 ArrayXXcd capillary_fibre::gamma

3.1.3.2 double capillary_fibre::n_glass

3.1.3.3 double capillary_fibre::R

3.1.3.4 double capillary_fibre::Z

The documentation for this class was generated from the following files:

- /home/sam/Project/XNLO/UPPE/src/capillary_fibre.hpp
- /home/sam/Project/XNLO/UPPE/src/capillary_fibre.cpp

3.2 Config_Settings Class Reference

`#include <config_settings.hpp>`

Public Member Functions

- Config_Settings ()
- void read_in (std::string, bool print_to_screen=true)
- void check_paths (bool print_to_screen=true)
- void step_path (int step)
- void print ()
- void print (std::string)
- int n_z ()
- void n_z_set (int)
- std::string n_z_description ()
- void n_z_description_set (std::string)
- int n_r ()
- void n_r_set (int)
- std::string n_r_description ()
- void n_r_description_set (std::string)
- int n_m ()
- void n_m_set (int)
- std::string n_m_description ()
- void n_m_description_set (std::string)
- int n_t ()
- void n_t_set (int)
- std::string n_t_description ()
- void n_t_description_set (std::string)
- double T ()
- void T_set (double)
- std::string T_description ()
- void T_description_set (std::string)
- double w_active_min ()
- void w_active_min_set (double)

- std::string w_active_min_description ()
- void w_active_min_description_set (std::string)
- double w_active_max ()
- void w_active_max_set (double)
- std::string w_active_max_description ()
- void w_active_max_description_set (std::string)
- double Z ()
- void Z_set (double)
- std::string Z_description ()
- void Z_description_set (std::string)
- double R ()
- void R_set (double)
- std::string R_description ()
- void R_description_set (std::string)
- double press ()
- void press_set (double)
- std::string press_description ()
- void press_description_set (std::string)
- double p_av ()
- void p_av_set (double)
- std::string p_av_description ()
- void p_av_description_set (std::string)
- double rep ()
- void rep_set (double)
- std::string rep_description ()
- void rep_description_set (std::string)
- double fwhm ()
- void fwhm_set (double)
- std::string fwhm_description ()
- void fwhm_description_set (std::string)
- double l_0 ()
- void l_0_set (double)
- std::string l_0_description ()
- void l_0_description_set (std::string)
- double ceo ()
- void ceo_set (double)
- std::string ceo_description ()
- void ceo_description_set (std::string)
- double waist ()
- void waist_set (double)
- std::string waist_description ()
- void waist_description_set (std::string)
- std::string pend_path ()
- void pend_path_set (std::string)
- std::string pend_path_description ()
- void pend_path_description_set (std::string)
- std::string path_input_j0 ()
- void path_input_j0_set (std::string)
- std::string path_input_j0_description ()
- void path_input_j0_description_set (std::string)
- std::string path_A_w_R ()
- void path_A_w_R_set (std::string)
- std::string path_A_w_R_description ()
- void path_A_w_R_description_set (std::string)
- std::string path_A_w_I ()

- void path_A_w_I_set (std::string)
- std::string path_A_w_I_description ()
- void path_A_w_I_description_set (std::string)
- std::string path_w_active ()
- void path_w_active_set (std::string)
- std::string path_w_active_description ()
- void path_w_active_description_set (std::string)
- std::string path_electron_density ()
- void path_electron_density_set (std::string)
- std::string path_electron_density_description ()
- void path_electron_density_description_set (std::string)
- std::string path_HHG_R ()
- void path_HHG_R_set (std::string)
- std::string path_HHG_R_description ()
- void path_HHG_R_description_set (std::string)
- std::string path_HHG_I ()
- void path_HHG_I_set (std::string)
- std::string path_HHG_I_description ()
- void path_HHG_I_description_set (std::string)
- std::string path_HHG_w ()
- void path_HHG_w_set (std::string)
- std::string path_HHG_w_description ()
- void path_HHG_w_description_set (std::string)
- std::string path_HHG_E ()
- void path_HHG_E_set (std::string)
- std::string path_HHG_E_description ()
- void path_HHG_E_description_set (std::string)
- std::string path_config_file ()
- void path_config_file_set (std::string)
- std::string path_config_file_description ()
- void path_config_file_description_set (std::string)
- std::string path_config_log ()
- void path_config_log_set (std::string)
- std::string path_config_log_description ()
- void path_config_log_description_set (std::string)

Private Types

- enum SN {
  SN::n_z = 0, SN::n_r, SN::n_m, SN::n_t,
  SN::T, SN::w_active_min, SN::w_active_max, SN::Z,
  SN::R, SN::press, SN::p_av, SN::rep,
  SN::fwhm, SN::I_0, SN::ceo, SN::waist,
  SN::pend_path, SN::path_input_j0, SN::path_A_w_R, SN::path_A_w_I,
  SN::path_w_active, SN::path_HHG_R, SN::path_HHG_I, SN::path_HHG_w,
  SN::path_HHG_E, SN::path_config_file, SN::path_config_log, SN::LAST_SN_ENTRY }

Private Member Functions

- void set_variable (std::string &, std::string &, std::string &, bool print_to_screen=true)
- std::string set_path (std::string, std::string, std::string pend="")
- std::string set_pre_path (std::string, std::string)
- std::string set_post_path (std::string, std::string)

Private Attributes

- int n_z_ = 50
- int n_r_ = 20
- int n_m_ = 20
- int n_t_ = 4096
- double T_ = 500.0e-15
- double w_active_min_ = 2.0e14
- double w_active_max_ = 8.0e15
- double Z_ = 5.0e-3
- double R_ = 75.0e-6
- double press_ = 100.0e-3
- double p_av_ = 1.0
- double rep_ = 1.0e3
- double fwhm_ = 40e-15
- double l_0_ = 800e-9
- double ceo_ = 0.0
- double waist_ = 48.0e-6
- std::string path_input_j0_ = "../input/J0_zeros.bin"
- std::string path_A_w_R_ = "../output/A_w_R.bin"
- std::string path_A_w_I_ = "../output/A_w_I.bin"
- std::string path_w_active_ = "../output/w_active.bin"
- std::string path_electron_density_ = "../output/electron_density.bin"
- std::string path_HHG_R_ = "../output/HHG_R.bin"
- std::string path_HHG_I_ = "../output/HHG_I.bin"
- std::string path_HHG_w_ = "../output/HHG_w.bin"
- std::string path_HHG_E_ = "../output/HHG_E.bin"
- std::string path_config_file_ = "./config.txt"
- std::string path_config_log_ = "../output/config_log.txt"
- std::string pend_path_ = "prepend"
- std::string n_z_description_ = "(default) (int) Number of steps in Z"
- std::string n_r_description_ = "(default) (int) The z_r value"
- std::string n_m_description_ = "(default) (int) Number of modes"
- std::string n_t_description_ = "(default) (int) The z_t value"
- std::string T_description_ = "(default) (double) The T value"
- std::string w_active_min_description_ = "(default) (double) Minimum angular frequency"
- std::string w_active_max_description_ = "(default) (double) Maximum angular frequency"
- std::string Z_description_ = "(default) (double) Length of capillary"
- std::string R_description_ = "(default) (double) Radius of capillary"
- std::string press_description_ = "(default) (double) Pressure of the gas"
- std::string p_av_description_ = "(default) (double) The p_av value"
- std::string rep_description_ = "(default) (double) The rep value"
- std::string fwhm_description_ = "(default) (double) Full width at half max"
- std::string l_0_description_ = "(default) (double) Laser central wavelength"
- std::string ceo_description_ = "(default) (double) The ceo value"
- std::string waist_description_ = "(default) (double) The waist value"
- std::string pend_path_description_ = "(default) (std::string) Pending switch"
- std::string path_input_j0_description_ = "(default) (std::string) Path to J0_zeros.bin"
- std::string path_A_w_R_description_ = "(default) (std::string) Path of A_w_R"
- std::string path_A_w_I_description_ = "(default) (std::string) Path of A_w_I"
- std::string path_w_active_description_ = "(default) (std::string) Path of w_active"
- std::string path_electron_density_description_ = "(default) (std::string) Path of electron_density"
- std::string path_HHG_R_description_ = "(default) (std::string) Path of HHG_R"
- std::string path_HHG_I_description_ = "(default) (std::string) Path of HHG_I"
- std::string path_HHG_w_description_ = "(default) (std::string) Path of HHG w"
- std::string path_HHG_E_description_ = "(default) (std::string) Path of HHG E"
- std::string path_config_file_description_ = "(default) (std::string) config.txt path"
- std::string path_config_log_description_ = "(default) (std::string) config_log.txt path"

Static Private Attributes

- static const char * setting_name [ ]

3.2.1 Detailed Description

Modified by Samuel Senior on 05/02/2017. Reads in input parameters and settings from a config file.

3.2.2 Member Enumeration Documentation

3.2.2.1 enum Config_Settings::SN [strong],[private]

Enumerator

n_z
n_r
n_m
n_t
T
w_active_min
w_active_max
Z
R
press
p_av
rep
fwhm
I_0
ceo
waist
pend_path
path_input_j0
path_A_w_R
path_A_w_I
path_w_active
path_HHG_R
path_HHG_I
path_HHG_w
path_HHG_E
path_config_file
path_config_log
LAST_SN_ENTRY

3.2.3 Constructor & Destructor Documentation

3.2.3.1 Config_Settings::Config_Settings ( )

Constructor

3.2.4 Member Function Documentation

3.2.4.1 double Config_Settings::ceo ( )

3.2.4.2 std::string Config_Settings::ceo_description ( )

3.2.4.3 void Config_Settings::ceo_description_set (std::string *description*)

3.2.4.4 void Config_Settings::ceo_set (double *value*)

3.2.4.5 void Config_Settings::check_paths (bool *print_to_screen* = `true`)

3.2.4.6 double Config_Settings::fwhm ( )

3.2.4.7 std::string Config_Settings::fwhm_description ( )

3.2.4.8 void Config_Settings::fwhm_description_set (std::string *description*)

3.2.4.9 void Config_Settings::fwhm_set (double *value*)

3.2.4.10 double Config_Settings::l_0 ( )

3.2.4.11 std::string Config_Settings::l_0_description ( )

3.2.4.12 void Config_Settings::l_0_description_set (std::string *description*)

3.2.4.13 void Config_Settings::l_0_set (double *value*)

3.2.4.14 int Config_Settings::n_m ( )

3.2.4.15 std::string Config_Settings::n_m_description ( )

3.2.4.16 void Config_Settings::n_m_description_set (std::string *description*)

3.2.4.17 void Config_Settings::n_m_set (int *value*)

3.2.4.18 int Config_Settings::n_r ( )

3.2.4.19 std::string Config_Settings::n_r_description ( )

3.2.4.20 void Config_Settings::n_r_description_set (std::string *description*)

3.2.4.21 void Config_Settings::n_r_set (int *value*)

3.2.4.22 int Config_Settings::n_t ( )

3.2.4.23 std::string Config_Settings::n_t_description ( )

3.2.4.24 void Config_Settings::n_t_description_set (std::string *description*)

3.2.4.25 void Config_Settings::n_t_set (int *value*)

3.2.4.26 int Config_Settings::n_z ( )

3.2.4.27 std::string Config_Settings::n_z_description ( )

3.2.4.28 void Config_Settings::n_z_description_set (std::string *description*)

3.2.4.29 void Config_Settings::n_z_set (int *value*)

3.2.4.30 double Config_Settings::p_av ( )

3.2.4.31 std::string Config_Settings::p_av_description ( )

3.2.4.32 void Config_Settings::p_av_description_set (std::string *description*)

3.2.4.33 void Config_Settings::p_av_set (double *value*)

3.2.4.34 std::string Config_Settings::path_A_w_l ( )

3.2.4.35 std::string Config_Settings::path_A_w_l_description ( )

3.2.4.36 void Config_Settings::path_A_w_l_description_set (std::string *description*)

3.2.4.37 void Config_Settings::path_A_w_l_set (std::string *value*)

3.2.4.38 std::string Config_Settings::path_A_w_R ( )

3.2.4.39 std::string Config_Settings::path_A_w_R_description ( )

3.2.4.40 void Config_Settings::path_A_w_R_description_set (std::string *description*)

3.2.4.41 void Config_Settings::path_A_w_R_set (std::string *value*)

3.2.4.42 std::string Config_Settings::path_config_file ( )

3.2.4.43 std::string Config_Settings::path_config_file_description ( )

3.2.4.44 void Config_Settings::path_config_file_description_set (std::string *description*)

3.2.4.45 void Config_Settings::path_config_file_set (std::string *value*)

3.2.4.46 std::string Config_Settings::path_config_log ( )

3.2.4.47 std::string Config_Settings::path_config_log_description ( )

3.2.4.48 void Config_Settings::path_config_log_description_set (std::string *description*)

3.2.4.49 void Config_Settings::path_config_log_set (std::string *value*)

3.2.4.50 std::string Config_Settings::path_electron_density ( )

3.2.4.51 std::string Config_Settings::path_electron_density_description ( )

3.2.4.52 void Config_Settings::path_electron_density_description_set (std::string *description*)

3.2.4.53 void Config_Settings::path_electron_density_set (std::string *value*)

3.2.4.54 std::string Config_Settings::path_HHG_E ( )

3.2.4.55 std::string Config_Settings::path_HHG_E_description ( )

3.2.4.56 void Config_Settings::path_HHG_E_description_set (std::string *description*)

3.2.4.57 void Config_Settings::path_HHG_E_set (std::string *value*)

3.2.4.58 std::string Config_Settings::path_HHG_I ( )

3.2.4.59 std::string Config_Settings::path_HHG_I_description ( )

3.2.4.60 void Config_Settings::path_HHG_I_description_set (std::string *description*)

3.2.4.61 void Config_Settings::path_HHG_I_set (std::string *value*)

3.2.4.62 std::string Config_Settings::path_HHG_R ( )

3.2.4.63 std::string Config_Settings::path_HHG_R_description ( )

3.2.4.64 void Config_Settings::path_HHG_R_description_set (std::string *description*)

3.2.4.65 void Config_Settings::path_HHG_R_set (std::string *value*)

3.2.4.66 std::string Config_Settings::path_HHG_w ( )

3.2.4.67 std::string Config_Settings::path_HHG_w_description ( )

3.2.4.68 void Config_Settings::path_HHG_w_description_set (std::string *description*)

3.2.4.69 void Config_Settings::path_HHG_w_set (std::string *value*)

3.2.4.70 std::string Config_Settings::path_input_j0 ( )

3.2.4.71 std::string Config_Settings::path_input_j0_description ( )

3.2.4.72 void Config_Settings::path_input_j0_description_set (std::string *description*)

3.2.4.73 void Config_Settings::path_input_j0_set (std::string *value*)

3.2.4.74 std::string Config_Settings::path_w_active ( )

3.2.4.75 std::string Config_Settings::path_w_active_description ( )

3.2.4.76 void Config_Settings::path_w_active_description_set (std::string *description*)

3.2.4.77 void Config_Settings::path_w_active_set (std::string *value*)

3.2.4.78 std::string Config_Settings::pend_path ( )

3.2.4.79 std::string Config_Settings::pend_path_description ( )

3.2.4.80 void Config_Settings::pend_path_description_set (std::string *description*)

3.2.4.81 void Config_Settings::pend_path_set (std::string *value*)

3.2.4.82 double Config_Settings::press ( )

3.2.4.83 std::string Config_Settings::press_description ( )

3.2.4.84 void Config_Settings::press_description_set (std::string *description*)

3.2.4.85 void Config_Settings::press_set (double *value*)

3.2.4.86 void Config_Settings::print ( )

3.2.4.87 void Config_Settings::print (std::string *path_*)

3.2.4.88 double Config_Settings::R ( )

3.2.4.89 std::string Config_Settings::R_description ( )

3.2.4.90 void Config_Settings::R_description_set (std::string *description*)

3.2.4.91 void Config_Settings::R_set (double *value*)

3.2.4.92 void Config_Settings::read_in (std::string *path,* bool *print_to_screen* = `true`)

3.2.4.93 double Config_Settings::rep ( )

3.2.4.94 std::string Config_Settings::rep_description ( )

3.2.4.95 void Config_Settings::rep_description_set (std::string *description*)

3.2.4.96 void Config_Settings::rep_set (double *value*)

3.2.4.97 std::string Config_Settings::set_path (std::string *path,* std::string *pending_string,* std::string *pend* = " ") `[private]`

3.2.4.98 std::string Config_Settings::set_post_path (std::string *path,* std::string *post_path*) `[private]`

3.2.4.99 std::string Config_Settings::set_pre_path (std::string *pre_path,* std::string *path*) `[private]`

3.2.4.100 void Config_Settings::set_variable (std::string & *variable_name,* std::string & *variable_value_str,* std::string & *input_description_char,* bool *print_to_screen* = `true`) `[private]`

3.2.4.101 void Config_Settings::step_path (int *step*)

3.2.4.102 double Config_Settings::T ( )

3.2.4.103 std::string Config_Settings::T_description ( )

3.2.4.104 void Config_Settings::T_description_set (std::string *description*)

3.2.4.105 void Config_Settings::T_set (double *value*)

3.2.4.106 double Config_Settings::w_active_max ( )

3.2.4.107 std::string Config_Settings::w_active_max_description ( )

3.2.4.108 void Config_Settings::w_active_max_description_set (std::string *description*)

3.2.4.109 void Config_Settings::w_active_max_set (double *value*)

3.2.4.110 double Config_Settings::w_active_min ( )

3.2.4.111 std::string Config_Settings::w_active_min_description ( )

3.2.4.112 void Config_Settings::w_active_min_description_set (std::string *description*)

3.2.4.113 void Config_Settings::w_active_min_set (double *value*)

3.2.4.114 double Config_Settings::waist ( )

3.2.4.115 std::string Config_Settings::waist_description ( )

3.2.4.116 void Config_Settings::waist_description_set (std::string *description*)

3.2.4.117 void Config_Settings::waist_set (double *value*)

3.2.4.118 double Config_Settings::Z ( )

3.2.4.119 std::string Config_Settings::Z_description ( )

3.2.4.120 void Config_Settings::Z_description_set (std::string *description*)

3.2.4.121 void Config_Settings::Z_set (double *value*)

3.2.5 Member Data Documentation

3.2.5.1 double Config_Settings::ceo_ = 0.0 [private]

3.2.5.2 std::string Config_Settings::ceo_description_ = "(default) (double) The ceo value" [private]

3.2.5.3 double Config_Settings::fwhm_ = 40e-15 [private]

3.2.5.4 std::string Config_Settings::fwhm_description_ = "(default) (double) Full width at half max" [private]

3.2.5.5 double Config_Settings::l_0_ = 800e-9 [private]

3.2.5.6 std::string Config_Settings::l_0_description_ = "(default) (double) Laser central wavelength" [private]

3.2.5.7 int Config_Settings::n_m_ = 20 [private]

3.2.5.8 std::string Config_Settings::n_m_description_ = "(default) (int) Number of modes" [private]

3.2.5.9 int Config_Settings::n_r_ = 20 [private]

3.2.5.10 std::string Config_Settings::n_r_description_ = "(default) (int) The z_r value" [private]

3.2.5.11 int Config_Settings::n_t_ = 4096 [private]

3.2.5.12 std::string Config_Settings::n_t_description_ = "(default) (int) The z_t value" [private]

3.2.5.13 int Config_Settings::n_z_ = 50 [private]

3.2.5.14 std::string Config_Settings::n_z_description_ = "(default) (int) Number of steps in Z" [private]

3.2.5.15 double Config_Settings::p_av_ = 1.0 [private]

3.2.5.16 std::string Config_Settings::p_av_description_ = "(default) (double) The p_av value" [private]

3.2.5.17 std::string Config_Settings::path_A_w_I_ = "../output/A_w_I.bin" [private]

3.2.5.18 std::string Config_Settings::path_A_w_I_description_ = "(default) (std::string) Path of A_w_I" [private]

3.2.5.19 std::string Config_Settings::path_A_w_R_ = "../output/A_w_R.bin" [private]

3.2.5.20 std::string Config_Settings::path_A_w_R_description_ = "(default) (std::string) Path of A_w_R" [private]

3.2.5.21 std::string Config_Settings::path_config_file_ = "./config.txt" [private]

3.2.5.22 std::string Config_Settings::path_config_file_description_ = "(default) (std::string) config.txt path" [private]

3.2.5.23 std::string Config_Settings::path_config_log_ = "../output/config_log.txt" [private]

3.2.5.24 std::string Config_Settings::path_config_log_description_ = "(default) (std::string) config_log.txt path" [private]

3.2.5.25 std::string Config_Settings::path_electron_density_ = "../output/electron_density.bin" [private]

3.2.5.26 std::string Config_Settings::path_electron_density_description_ = "(default) (std::string) Path of electron_density" [private]

3.2.5.27 std::string Config_Settings::path_HHG_E_ = "../output/HHG_E.bin" [private]

3.2.5.28 std::string Config_Settings::path_HHG_E_description_ = "(default) (std::string) Path of HHG E" [private]

3.2.5.29 std::string Config_Settings::path_HHG_I_ = "../output/HHG_I.bin" [private]

3.2.5.30 std::string Config_Settings::path_HHG_I_description_ = "(default) (std::string) Path of HHG_I" [private]

3.2.5.31 std::string Config_Settings::path_HHG_R_ = "../output/HHG_R.bin" [private]

3.2.5.32 std::string Config_Settings::path_HHG_R_description_ = "(default) (std::string) Path of HHG_R" [private]

3.2.5.33 std::string Config_Settings::path_HHG_w_ = "../output/HHG_w.bin" [private]

3.2.5.34 std::string Config_Settings::path_HHG_w_description_ = "(default) (std::string) Path of HHG w" [private]

3.2.5.35 std::string Config_Settings::path_input_j0_ = "../input/J0_zeros.bin" [private]

3.2.5.36 std::string Config_Settings::path_input_j0_description_ = "(default) (std::string) Path to J0_zeros.bin" [private]

3.2.5.37 std::string Config_Settings::path_w_active_ = "../output/w_active.bin" [private]

3.2.5.38 std::string Config_Settings::path_w_active_description_ = "(default) (std::string) Path of w_active" [private]

3.2.5.39 std::string Config_Settings::pend_path_ = "prepend" [private]

3.2.5.40 std::string Config_Settings::pend_path_description_ = "(default) (std::string) Pending switch" [private]

3.2.5.41 double Config_Settings::press_ = 100.0e-3 [private]

3.2.5.42 std::string Config_Settings::press_description_ = "(default) (double) Pressure of the gas" [private]

3.2.5.43 double Config_Settings::R_ = 75.0e-6 [private]

3.2.5.44 std::string Config_Settings::R_description_ = "(default) (double) Radius of capillary" [private]

3.2.5.45 double Config_Settings::rep_ = 1.0e3 [private]

3.2.5.46 std::string Config_Settings::rep_description_ = "(default) (double) The rep value" [private]

3.2.5.47 const char * Config_Settings::setting_name [static], [private]

Initial value:

```
= {
  "n_z", "n_r", "n_m",
  "n_t", "T", "w_active_min", "w_active_max",
  "Z", "R",
  "press",
  "p_av", "rep", "fwhm", "l_0", "ceo", "waist",
  "pend_path",
  "path_input_j0",
  "path_A_w_R", "path_A_w_I", "path_w_active",
  "path_HHG_R", "path_HHG_I", "path_HHG_w", "path_HHG_E",
  "path_config_file", "path_config_log"
}
```

3.2.5.48 double Config_Settings::T_ = 500.0e-15 [private]

3.2.5.49 std::string Config_Settings::T_description_ = "(default) (double) The T value" [private]

3.2.5.50 double Config_Settings::w_active_max_ = 8.0e15 [private]

3.2.5.51 std::string Config_Settings::w_active_max_description_ = "(default) (double) Maximum angular frequency" [private]

3.2.5.52 double Config_Settings::w_active_min_ = 2.0e14 [private]

3.2.5.53 std::string Config_Settings::w_active_min_description_ = "(default) (double) Minimum angular frequency" [private]

3.2.5.54 double Config_Settings::waist_ = 48.0e-6 [private]

3.2.5.55 std::string Config_Settings::waist_description_ = "(default) (double) The waist value" [private]

3.2.5.56 double Config_Settings::Z_ = 5.0e-3 [private]

3.2.5.57 std::string Config_Settings::Z_description_ = "(default) (double) Length of capillary" [private]

The documentation for this class was generated from the following files:

- /home/sam/Project/XNLO/UPPE/src/config_settings.hpp
- /home/sam/Project/XNLO/UPPE/src/config_settings.cpp

3.3 DHT Class Reference

`#include <DHT.hpp>`

Public Member Functions

- DHT ()
- DHT (int n_r_, maths_textbook &maths_)
- Eigen::ArrayXcd forward (Eigen::ArrayXcd f_r_)
- Eigen::ArrayXcd backward (Eigen::ArrayXcd f_kr_)

Private Attributes

- MatrixXcd H

3.3.1 Detailed Description

Originally created by Patrick Anderson. Modified by Samuel Senior on 10/03/2017. "DHT" evaluates the forward and backward discrete Hankel transform. Based on Fisk, Computer Physics Communications, 43 (1987). Complex datatype used here, should really template/overload.

3.3.2 Constructor & Destructor Documentation

3.3.2.1 DHT::DHT ( )

Default constructor

3.3.2.2 DHT::DHT (int *n_r_*, maths_textbook & *maths_*)

Parameterized constructor

3.3.3 Member Function Documentation

3.3.3.1 Eigen::ArrayXcd DHT::backward (Eigen::ArrayXcd *f_kr_*)

Backward transform

3.3.3.2 Eigen::ArrayXcd DHT::forward (Eigen::ArrayXcd *f_r_*)

Forward transform

3.3.4 Member Data Documentation

3.3.4.1 MatrixXcd DHT::H [private]

The documentation for this class was generated from the following files:

- /home/sam/Project/XNLO/UPPE/src/DHT.hpp
- /home/sam/Project/XNLO/UPPE/src/DHT.cpp

3.4 Dipole_moment Class Reference

`#include <dipole_moment.hpp>`

Public Member Functions

- Dipole_moment ()
- void update_dipole_moment ()
- ArrayXXd get_moment ()

Private Attributes

- ArrayXXd dipole_data

3.4.1 Detailed Description

Created by Samuel Senior on 10/03/2017. "dipole_moment" wraps around the dipole moment calculations and output files.

3.4.2 Constructor & Destructor Documentation

3.4.2.1 Dipole_moment::Dipole_moment ( )

Constructor

3.4.3 Member Function Documentation

3.4.3.1 ArrayXXd Dipole_moment::get_moment ( )

3.4.3.2 void Dipole_moment::update_dipole_moment ( )

3.4.4 Member Data Documentation

3.4.4.1 ArrayXXd Dipole_moment::dipole_data [private]

The documentation for this class was generated from the following files:

- /home/sam/Project/XNLO/UPPE/src/dipole_moment.hpp
- /home/sam/Project/XNLO/UPPE/src/dipole_moment.cpp

3.5 grid_rkr Class Reference

`#include <grid_rkr.hpp>`

Public Member Functions

- grid_rkr ()
- grid_rkr (int n_r_, double R_, int n_m_, maths_textbook &maths_)

Public Attributes

- ArrayXd r
- ArrayXd kr
- int n_r
- double R
- int n_m

3.5.1 Detailed Description

Originally created by Patrick Anderson. Modified by Samuel Senior on 10/03/2017. "grid_rkr" is a non-uniform radial grid. The spectral counterpart of this grid is evaluated and accessible.

3.5.2 Constructor & Destructor Documentation

3.5.2.1 grid_rkr::grid_rkr ( )

Default constructor

3.5.2.2 grid_rkr::grid_rkr (int *n_r_*, double *R_*, int *n_m_*, maths_textbook & *maths_*)

Parameterized constructor

3.5.3 Member Data Documentation

3.5.3.1 ArrayXd grid_rkr::kr

3.5.3.2 int grid_rkr::n_m

3.5.3.3 int grid_rkr::n_r

3.5.3.4 ArrayXd grid_rkr::r

3.5.3.5 double grid_rkr::R

The documentation for this class was generated from the following files:

- /home/sam/Project/XNLO/UPPE/src/grid_rkr.hpp
- /home/sam/Project/XNLO/UPPE/src/grid_rkr.cpp

3.6 grid_tw Class Reference

`#include <grid_tw.hpp>`

Public Member Functions

- grid_tw ()
- grid_tw (int N_t_, double T_, double w_active_min_, double w_active_max_, maths_textbook &maths_)

Public Attributes

- ArrayXd t
- ArrayXd w_active
- int n_t
- int n_active
- int w_active_min_index

3.6.1 Detailed Description

Originally created by Patrick Anderson. Modified by Samuel Senior on 10/03/2017. "grid_tw" is a linear temporal grid. The spectral counterpart of this grid is evaluated and made accessible.

3.6.2 Constructor & Destructor Documentation

3.6.2.1 grid_tw::grid_tw ( )

3.6.2.2 grid_tw::grid_tw (int *n_t_*, double *T_*, double *w_active_min_*, double *w_active_max_*, maths_textbook & *maths_*)

Parameterized Constructor

3.6.3 Member Data Documentation

3.6.3.1 int grid_tw::n_active

3.6.3.2 int grid_tw::n_t

3.6.3.3 ArrayXd grid_tw::t

3.6.3.4 ArrayXd grid_tw::w_active

3.6.3.5 int grid_tw::w_active_min_index

The documentation for this class was generated from the following files:

- /home/sam/Project/XNLO/UPPE/src/grid_tw.hpp
- /home/sam/Project/XNLO/UPPE/src/grid_tw.cpp

3.7 IO Class Reference

`#include <IO.hpp>`

Public Member Functions

- IO ()
- Array< unsigned short, Dynamic, Dynamic > read_uint16 (const char *path_, int N_row_, int N_col_)
- ArrayXXi read_int (const char *path_, int N_row_, int N_col_)
- ArrayXXd read_double (const std::string path_, int N_row_, int N_col_)
- ArrayXXd read_ascii_double (const std::string path, int N_row_, int N_col_)
- void write_double (const std::string path_, ArrayXXd input_, int N_row_, int N_col_, bool print=true)
- void write_header (const std::string path_, int N_row_, int N_col_, bool print=true)
- void overwrite (const std::string path, bool print=true)
- void write_ascii_double (ArrayXd data, std::string path, bool print=true)

3.7.1 Detailed Description

Originally created by Patrick Anderson. Modified by Samuel Senior on 10/03/2017. "IO" objects enable reading/writing of binary files to/from Eigen arrays.

3.7.2 Constructor & Destructor Documentation

3.7.2.1 IO::IO ( )

Constructor

3.7.3 Member Function Documentation

3.7.3.1 void IO::overwrite (const std::string *path*, bool *print* = `true`)

Overwrites given binary file.

3.7.3.2 ArrayXXd IO::read_ascii_double (const std::string *path*, int *N_row_*, int *N_col_*)

Read double to Eigen array from ascii file

3.7.3.3 ArrayXXd IO::read_double (const std::string *path_*, int *N_row_*, int *N_col_*)

Read double to Eigen array from binary file

3.7.3.4 ArrayXXi IO::read_int (const char * *path_*, int *N_row_*, int *N_col_*)

int

3.7.3.5 Array< unsigned short, Dynamic, Dynamic > IO::read_uint16 (const char * *path_*, int *N_row_*, int *N_col_*)

Read from binary file to N_col_ by N_row_ Eigen array uint16

3.7.3.6 void IO::write_ascii_double (ArrayXd *data*, std::string *path*, bool *print* = `true`)

3.7.3.7 void IO::write_double (const std::string *path_*, ArrayXXd *input_*, int *N_row_*, int *N_col_*, bool *print* = `true`)

Write to binary file from N_col_ by N_row_ Eigen array double

3.7.3.8 void IO::write_header (const std::string *path_*, int *N_row_*, int *N_col_*, bool *print* = `true`)

Write UPPE binary header to given binary file. Header takes the form: Offset Size (Bytes) Type/Contents Description 0 4 'UPPE' Binary format name 4 4 int Version Number 8 4 int Subversion number 12 4 int Size of header 16 4 int N_row 20 4 int N_col 24 4 int Total size of data 28 4 int Size of each double in the data

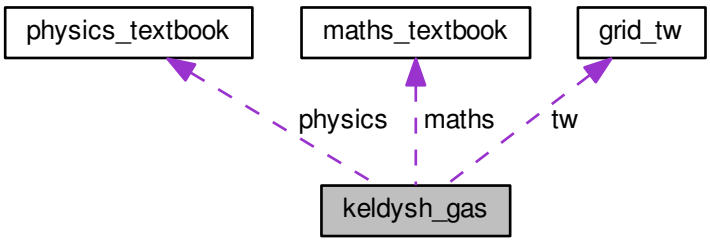
The documentation for this class was generated from the following files:

- /home/sam/Project/XNLO/UPPE/src/IO.hpp
- /home/sam/Project/XNLO/UPPE/src/IO.cpp

3.8 keldysh_gas Class Reference

`#include <keldysh_gas.hpp>`

Collaboration diagram for keldysh_gas:



Public Member Functions

- keldysh_gas (double press_, grid_tw &tw_, DFTI_DESCRIPTOR_HANDLE &ft_, maths_textbook &maths_)
- double atom_density (double z)
- ArrayXcd nl_polarization (ArrayXd E_t_)
- ArrayXd ionization_rate (ArrayXd E_t_)
- ArrayXd electron_density (ArrayXd W_t_, double z)
- ArrayXcd current_density (ArrayXd E_t_, double z)

Public Attributes

- double atom_density_max
- double z_max
- double inlet_1
- double inlet_2
- double transitionLength
- double U
- double C_kl
- double n_star
- double kappa

Private Attributes

- physics_textbook physics
- maths_textbook maths
- grid_tw tw
- DFTI_DESCRIPTOR_HANDLE ft

3.8.1 Detailed Description

Originally created by Patrick Anderson. Modified by Samuel Senior on 10/03/2017. "keldysh_gas" contains the medium response model.

3.8.2 Constructor & Destructor Documentation

3.8.2.1 keldysh_gas::keldysh_gas (double *press_*, grid_tw & *tw_*, DFTI_DESCRIPTOR_HANDLE & *ft_*, maths_textbook & *maths_*)

Constructor

3.8.3 Member Function Documentation

3.8.3.1 double keldysh_gas::atom_density (double *z*)

3.8.3.2 ArrayXcd keldysh_gas::current_density (ArrayXd *E_t_*, double *z*)

Evaluate Current density for active frequencies

3.8.3.3 ArrayXd keldysh_gas::electron_density (ArrayXd *W_t_*, double *z*)

Calculate free electron density (solve rate equations)

3.8.3.4 ArrayXd keldysh_gas::ionization_rate (ArrayXd *E_t_*)

Calulate ionization rate (Popov, 2004)

3.8.3.5 ArrayXcd keldysh_gas::nl_polarization (ArrayXd *E_t_*)

Evaluate nonlinear polarization for active frequencies

3.8.4 Member Data Documentation

3.8.4.1 double keldysh_gas::atom_density_max

3.8.4.2 double keldysh_gas::C_kl

3.8.4.3 DFTI_DESCRIPTOR_HANDLE keldysh_gas::ft [private]

3.8.4.4 double keldysh_gas::inlet_1

3.8.4.5 double keldysh_gas::inlet_2

3.8.4.6 double keldysh_gas::kappa

3.8.4.7 maths_textbook keldysh_gas::maths [private]

3.8.4.8 double keldysh_gas::n_star

3.8.4.9 physics_textbook keldysh_gas::physics [private]

3.8.4.10 double keldysh_gas::transitionLength

3.8.4.11 grid_tw keldysh_gas::tw [private]

3.8.4.12 double keldysh_gas::U

3.8.4.13 double keldysh_gas::z_max

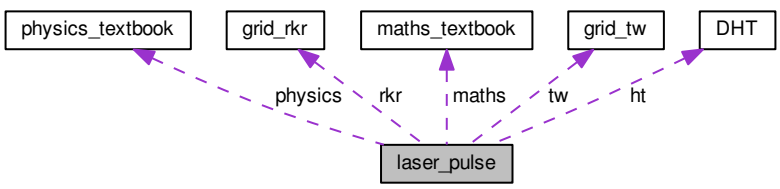
The documentation for this class was generated from the following files:

- /home/sam/Project/XNLO/UPPE/src/keldysh_gas.hpp
- /home/sam/Project/XNLO/UPPE/src/keldysh_gas.cpp

3.9 laser_pulse Class Reference

`#include <laser_pulse.hpp>`

Collaboration diagram for laser_pulse:



Public Member Functions

- laser_pulse (double p_av_, double rep_, double fwhm_, double l_0_, double ceo_, double waist_, grid_tw &tw_, grid_rkr &rkr_, DFTI_DESCRIPTOR_HANDLE &ft_, DHT &ht_, maths_textbook &maths_)
- void propagate (double dz_, capillary_fibre &capillary_, keldysh_gas &gas_)

Public Attributes

- ArrayXXcd A_w_active
- ArrayXXcd P_NL_r_t
- ArrayXXcd P_NL_m_t
- ArrayXXcd P_NL_w
- ArrayXXd electron_density
- double atom_density_max
- double p_pk
- double E_pk

Private Member Functions

- void RK_F_45 (double dz_, capillary_fibre &capillary_, keldysh_gas &gas_)
- ArrayXXcd RHS_UPPE (double dz_, ArrayXXcd A_w_active, capillary_fibre &capillary_, keldysh_gas &gas↩_)

Private Attributes

- physics_textbook physics
- maths_textbook maths
- grid_tw tw
- grid_rkr rkr
- DFTI_DESCRIPTOR_HANDLE ft
- DHT ht
- ArrayXXcd Y_4
- ArrayXXcd Y_5
- double e
- double z_position

3.9.1 Detailed Description

Originally created by Patrick Anderson. Modified by Samuel Senior on 10/03/2017. "laser_pulse" contains the active spectral amplitudes and governs their propagation over longitudinal step dz.

3.9.2 Constructor & Destructor Documentation

3.9.2.1 laser_pulse::laser_pulse (double *p_av_*, double *rep_*, double *fwhm_*, double *l_0_*, double *ceo_*, double *waist_*, grid_tw & *tw_*, grid_rkr & *rkr_*, DFTI_DESCRIPTOR_HANDLE & *ft_*, DHT & *ht_*, maths_textbook & *maths_*)

Constructor

3.9.3 Member Function Documentation

3.9.3.1 void laser_pulse::propagate (double *dz_*, capillary_fibre & *capillary_*, keldysh_gas & *gas_*)

Propagate sprectral amplitudes A_w_active over the longitudinal step dz_, based on A. Couairon, et al., Eur. Phys. J. Special Topics, 199, 5 (2011)

3.9.3.2 ArrayXXcd laser_pulse::RHS_UPPE (double *dz_*, ArrayXXcd *temp_1*, capillary_fibre & *capillary_*, keldysh_gas & *gas_*) [private]

Evaluate RHS of UPPE

3.9.3.3 void laser_pulse::RK_F_45 (double *h_*, capillary_fibre & *capillary_*, keldysh_gas & *gas_*) [private]

Runge-Kutta-Fehlberg 45 ODE solver

3.9.4 Member Data Documentation

3.9.4.1 ArrayXXcd laser_pulse::A_w_active

Spectral amplitudes

3.9.4.2 double laser_pulse::atom_density_max

3.9.4.3 double laser_pulse::e [private]

Error in RKF45 solve

3.9.4.4 double laser_pulse::E_pk

3.9.4.5 ArrayXXd laser_pulse::electron_density

3.9.4.6 DFTI_DESCRIPTOR_HANDLE laser_pulse::ft [private]

Fourier transform

3.9.4.7 DHT laser_pulse::ht [private]

Hankel transform

3.9.4.8 maths_textbook laser_pulse::maths [private]

Mathematical constants and functions

3.9.4.9 ArrayXXcd laser_pulse::P_NL_m_t

3.9.4.10 ArrayXXcd laser_pulse::P_NL_r_t

3.9.4.11 ArrayXXcd laser_pulse::P_NL_w

3.9.4.12 double laser_pulse::p_pk

3.9.4.13 physics_textbook laser_pulse::physics [private]

Physical constants

3.9.4.14 grid_rkr laser_pulse::rkr [private]

Radial grid

3.9.4.15 grid_tw laser_pulse::tw [private]

Temperal grid

3.9.4.16 ArrayXXcd laser_pulse::Y_4 [private]

RKF 4

3.9.4.17 ArrayXXcd laser_pulse::Y_5 [private]

RKF 5

3.9.4.18 double laser_pulse::z_position [private]

The documentation for this class was generated from the following files:

- /home/sam/Project/XNLO/UPPE/src/laser_pulse.hpp
- /home/sam/Project/XNLO/UPPE/src/laser_pulse.cpp

3.10 maths_textbook Class Reference

`#include <maths_textbook.hpp>`

Public Member Functions

- maths_textbook (std::string path_input_j0_)
- double trapz (ArrayXd x_, ArrayXd y_)
- ArrayXd cumtrapz (ArrayXd x_, ArrayXd y_)

Public Attributes

- double pi
- ArrayXd J0_zeros

Private Attributes

- std::string path_input_j0

3.10.1 Detailed Description

Originally created by Patrick Anderson. Modified by Samuel Senior on 10/03/2017. "maths_textbook" is a container for mathematical constants and functions.

3.10.2 Constructor & Destructor Documentation

3.10.2.1 maths_textbook::maths_textbook (std::string *path_input_j0_*)

Constructor

3.10.3 Member Function Documentation

3.10.3.1 ArrayXd maths_textbook::cumtrapz (ArrayXd *x_*, ArrayXd *y_*)

Cumulative trapezoidal integration

3.10.3.2 double maths_textbook::trapz (ArrayXd *x_*, ArrayXd *y_*)

Trapezoidal integration

3.10.4 Member Data Documentation

3.10.4.1 ArrayXd maths_textbook::J0_zeros

3.10.4.2 std::string maths_textbook::path_input_j0 [private]

3.10.4.3 double maths_textbook::pi

The documentation for this class was generated from the following files:

- /home/sam/Project/XNLO/UPPE/src/maths_textbook.hpp
- /home/sam/Project/XNLO/UPPE/src/maths_textbook.cpp

3.11 physics_textbook Class Reference

`#include <physics_textbook.hpp>`

Public Member Functions

- physics_textbook ()

Public Attributes

- double E_at
- double l_at
- double m_at
- double q_at
- double t_at
- double w_at
- double c
- double eps_0
- double mu_0
- double h_bar
- double k_B

3.11.1 Detailed Description

Modified by Patrick Anderson on 03/09/2015. "physics_textbook" is a container for physical constants.

3.11.2 Constructor & Destructor Documentation

3.11.2.1 physics_textbook::physics_textbook ( )

Constructor

3.11.3 Member Data Documentation

3.11.3.1 double physics_textbook::c

Speed of light in vacuum

3.11.3.2 double physics_textbook::E_at

3.11.3.3 double physics_textbook::eps_0

Permitivity of free space

3.11.3.4 double physics_textbook::h_bar

Reduced Planck constant

3.11.3.5 double physics_textbook::k_B

Boltzmann Constant

3.11.3.6 double physics_textbook::l_at

Bohr radius

3.11.3.7 double physics_textbook::m_at

3.11.3.8 double physics_textbook::mu_0

Permeability of free space

3.11.3.9 double physics_textbook::q_at

Electron charge

3.11.3.10 double physics_textbook::t_at

3.11.3.11 double physics_textbook::w_at

The documentation for this class was generated from the following files:

- /home/sam/Project/XNLO/UPPE/src/physics_textbook.hpp
- /home/sam/Project/XNLO/UPPE/src/physics_textbook.cpp

Chapter 4

File Documentation

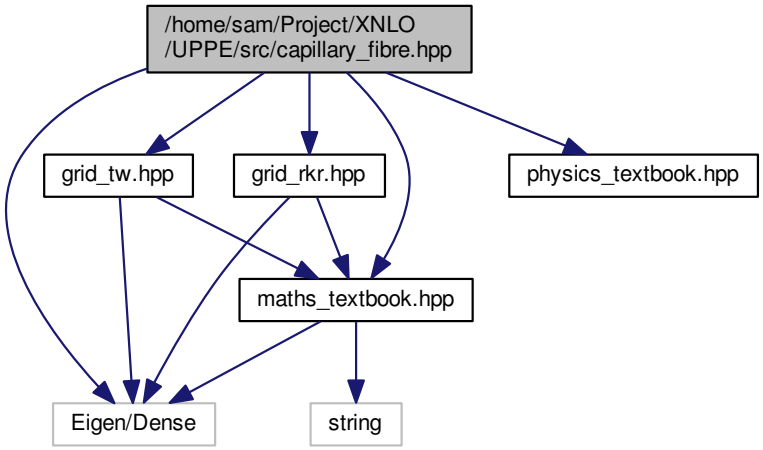
4.1 /home/sam/Project/XNLO/UPPE/src/capillary_fibre.cpp File Reference

```
#include "capillary_fibre.hpp"
#include "grid_rkr.hpp"
#include "grid_tw.hpp"
#include "physics_textbook.hpp"
#include "maths_textbook.hpp"
#include "Eigen/Dense"
```

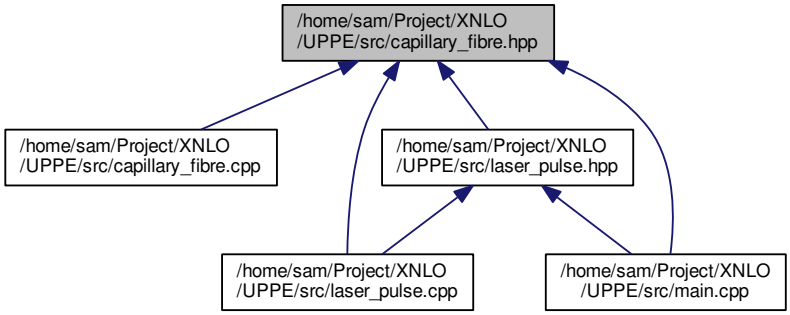
4.2 /home/sam/Project/XNLO/UPPE/src/capillary_fibre.hpp File Reference

```
#include "Eigen/Dense"
#include "grid_tw.hpp"
#include "grid_rkr.hpp"
#include "physics_textbook.hpp"
#include "maths_textbook.hpp"
```

Include dependency graph for capillary_fibre.hpp:



This graph shows which files directly or indirectly include this file:



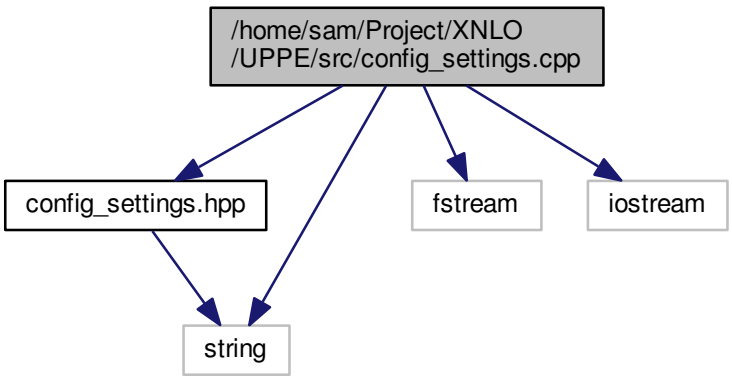
Classes

- class capillary_fibre

4.3 /home/sam/Project/XNLO/UPPE/src/config_settings.cpp File Reference

```
#include "config_settings.hpp"
#include <fstream>
#include <iostream>
#include <string>
```

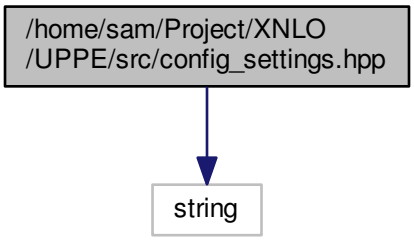
Include dependency graph for config_settings.cpp:



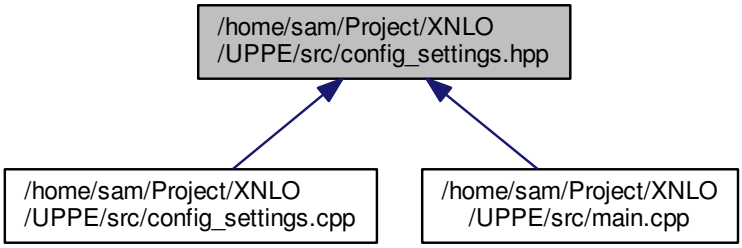
4.4 /home/sam/Project/XNLO/UPPE/src/config_settings.hpp File Reference

```
#include <string>
```

Include dependency graph for config_settings.hpp:



This graph shows which files directly or indirectly include this file:



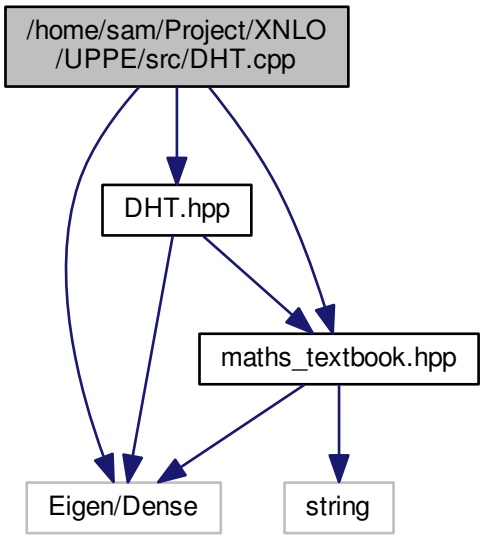
Classes

- class Config_Settings

4.5 /home/sam/Project/XNLO/UPPE/src/DHT.cpp File Reference

```
#include "DHT.hpp"
#include "Eigen/Dense"
#include "maths_textbook.hpp"
```

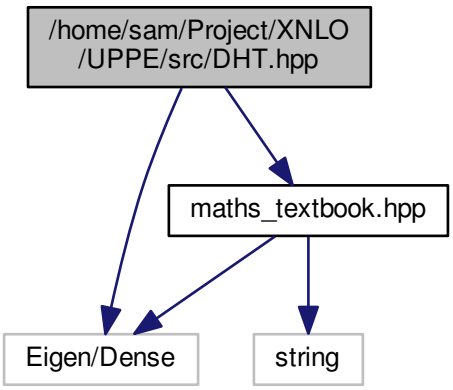
Include dependency graph for DHT.cpp:



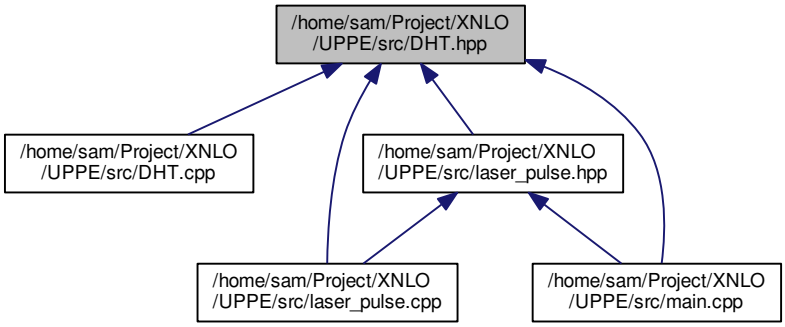
4.6 /home/sam/Project/XNLO/UPPE/src/DHT.hpp File Reference

```
#include "Eigen/Dense"
#include "maths_textbook.hpp"
```

Include dependency graph for DHT.hpp:



This graph shows which files directly or indirectly include this file:



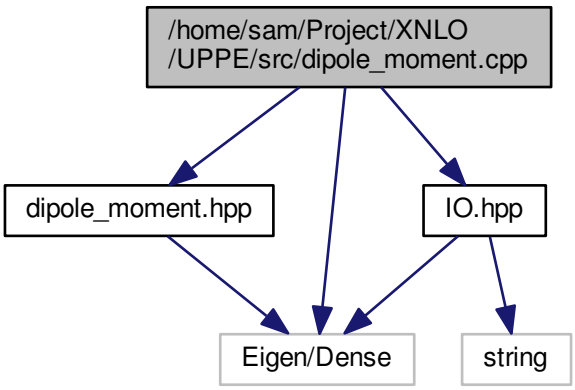
Classes

- class DHT

4.7 /home/sam/Project/XNLO/UPPE/src/dipole_moment.cpp File Reference

```
#include "dipole_moment.hpp"
#include "Eigen/Dense"
#include "IO.hpp"
```

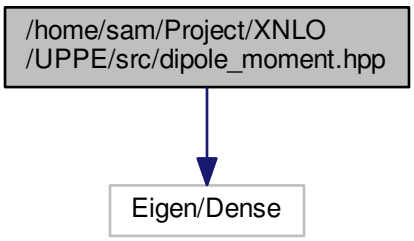
Include dependency graph for dipole_moment.cpp:



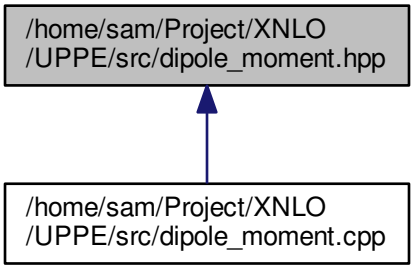
4.8 /home/sam/Project/XNLO/UPPE/src/dipole_moment.hpp File Reference

```
#include "Eigen/Dense"
```

Include dependency graph for dipole_moment.hpp:



This graph shows which files directly or indirectly include this file:



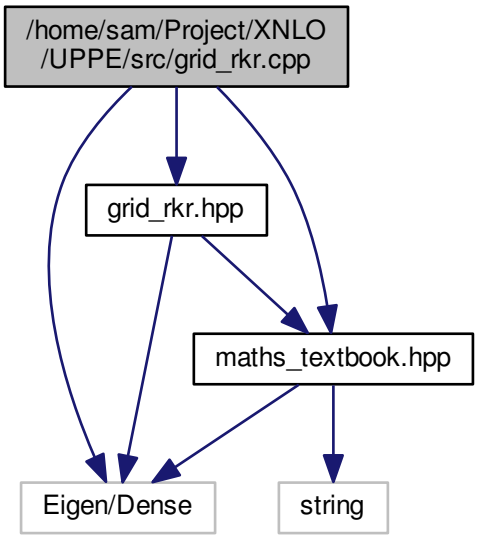
Classes

- class Dipole_moment

4.9 /home/sam/Project/XNLO/UPPE/src/grid_rkr.cpp File Reference

```
#include "grid_rkr.hpp"
#include "maths_textbook.hpp"
#include "Eigen/Dense"
```

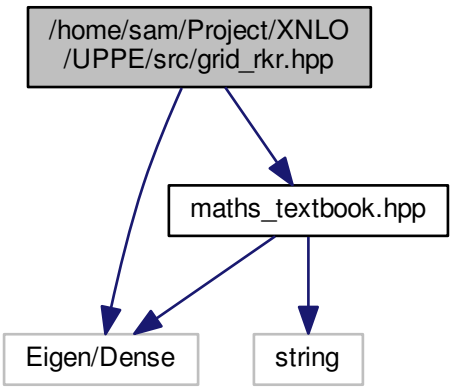
Include dependency graph for grid_rkr.cpp:



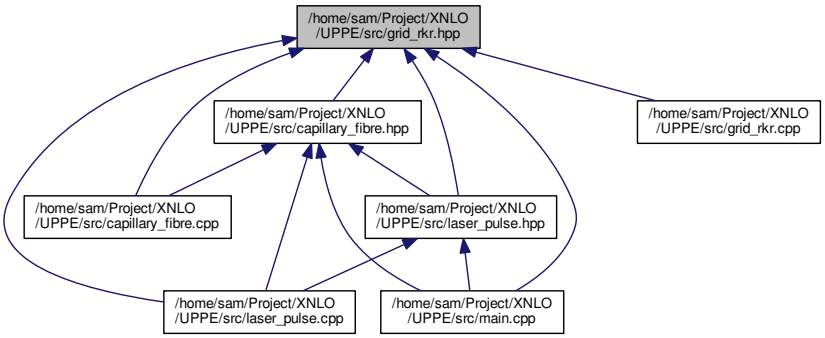
4.10 /home/sam/Project/XNLO/UPPE/src/grid_rkr.hpp File Reference

```
#include "Eigen/Dense"
#include "maths_textbook.hpp"
```

Include dependency graph for grid_rkr.hpp:



This graph shows which files directly or indirectly include this file:



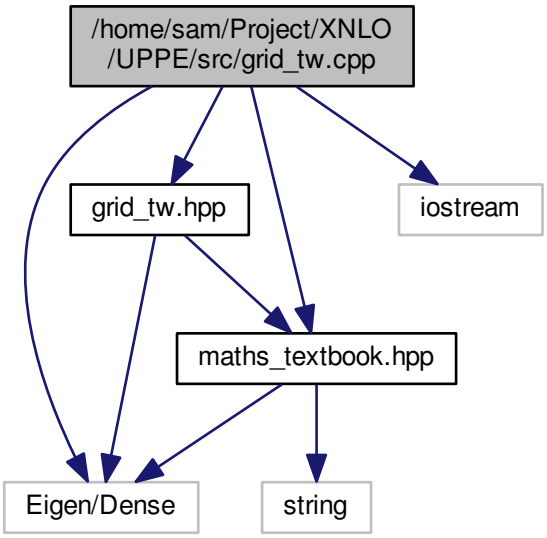
Classes

- class grid_rkr

4.11 /home/sam/Project/XNLO/UPPE/src/grid_tw.cpp File Reference

```
#include "grid_tw.hpp"
#include "maths_textbook.hpp"
#include "Eigen/Dense"
#include <iostream>
```

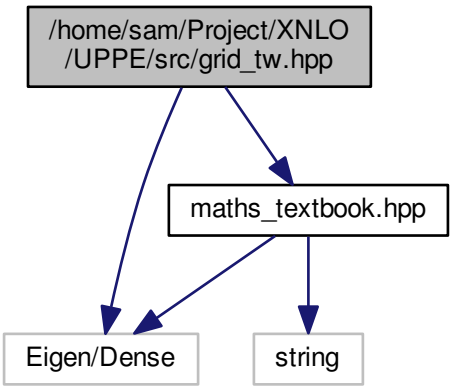
Include dependency graph for grid_tw.cpp:



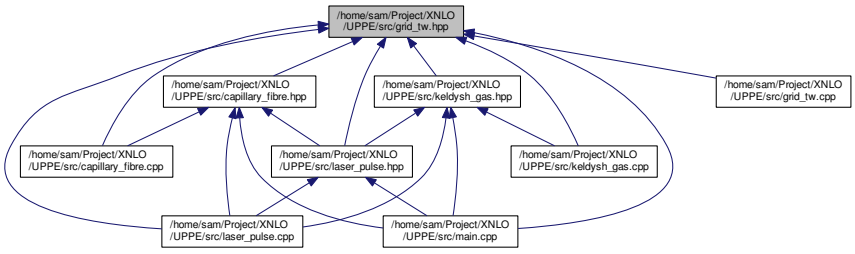
4.12 /home/sam/Project/XNLO/UPPE/src/grid_tw.hpp File Reference

```
#include "Eigen/Dense"
#include "maths_textbook.hpp"
```

Include dependency graph for grid_tw.hpp:



This graph shows which files directly or indirectly include this file:



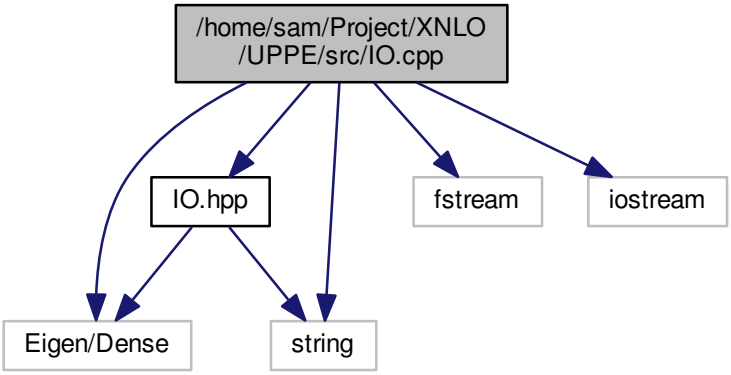
Classes

- class grid_tw

4.13 /home/sam/Project/XNLO/UPPE/src/IO.cpp File Reference

```
#include "IO.hpp"
#include "Eigen/Dense"
#include <fstream>
#include <iostream>
#include <string>
```

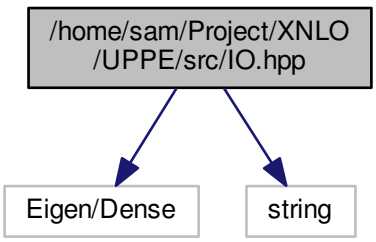
Include dependency graph for IO.cpp:



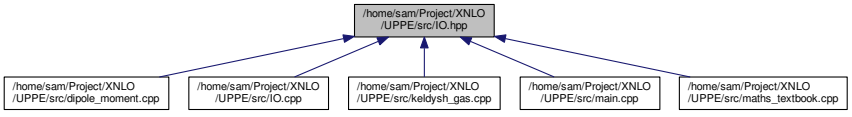
4.14 /home/sam/Project/XNLO/UPPE/src/IO.hpp File Reference

```
#include "Eigen/Dense"
#include <string>
```

Include dependency graph for IO.hpp:



This graph shows which files directly or indirectly include this file:



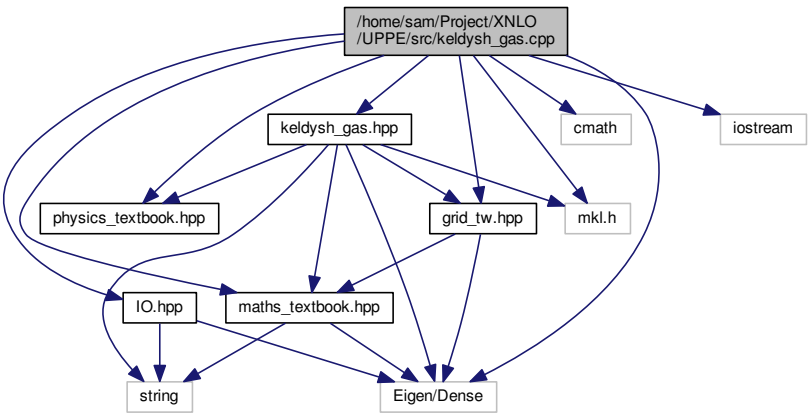
Classes

- class IO

4.15 /home/sam/Project/XNLO/UPPE/src/keldysh_gas.cpp File Reference

```
#include "keldysh_gas.hpp"
#include "physics_textbook.hpp"
#include "grid_tw.hpp"
#include <mkl.h>
#include "Eigen/Dense"
#include "maths_textbook.hpp"
#include <cmath>
#include "IO.hpp"
#include <iostream>
```

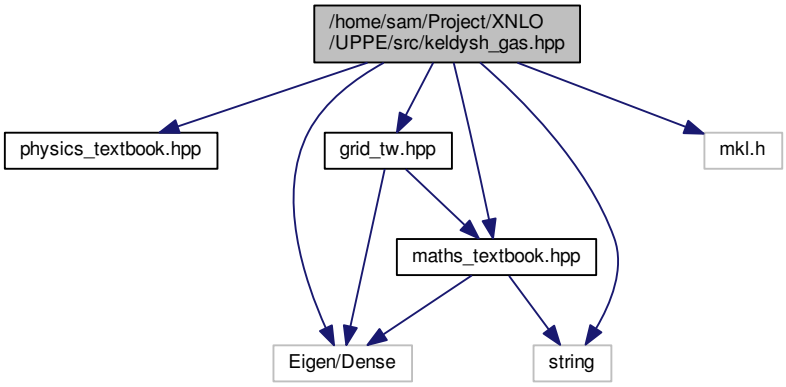
Include dependency graph for keldysh_gas.cpp:



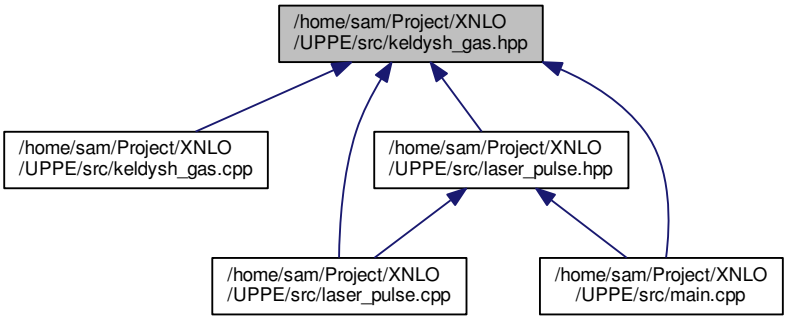
4.16 /home/sam/Project/XNLO/UPPE/src/keldysh_gas.hpp File Reference

```
#include "physics_textbook.hpp"
#include "maths_textbook.hpp"
#include "grid_tw.hpp"
#include <mkl.h>
#include "Eigen/Dense"
#include <string>
```

Include dependency graph for keldysh_gas.hpp:



This graph shows which files directly or indirectly include this file:



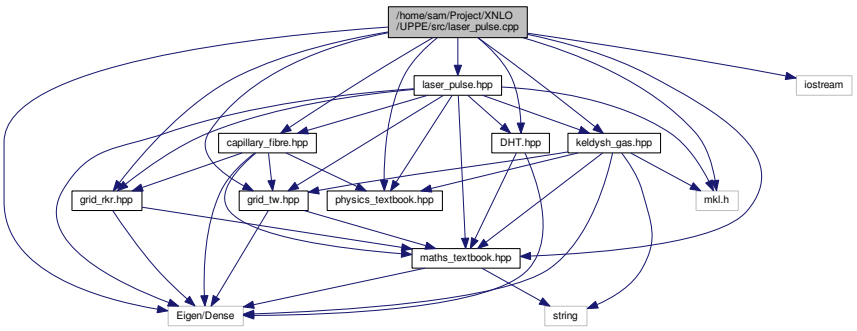
Classes

- class keldysh_gas

4.17 /home/sam/Project/XNLO/UPPE/src/laser_pulse.cpp File Reference

```
#include "laser_pulse.hpp"
#include "grid_tw.hpp"
#include "grid_rkr.hpp"
#include <mkl.h>
#include "DHT.hpp"
#include "physics_textbook.hpp"
#include "maths_textbook.hpp"
#include "Eigen/Dense"
#include "capillary_fibre.hpp"
#include "keldysh_gas.hpp"
#include <iostream>
```

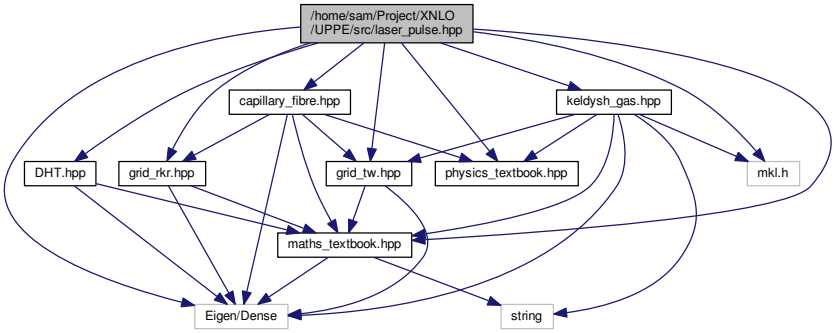
Include dependency graph for laser_pulse.cpp:



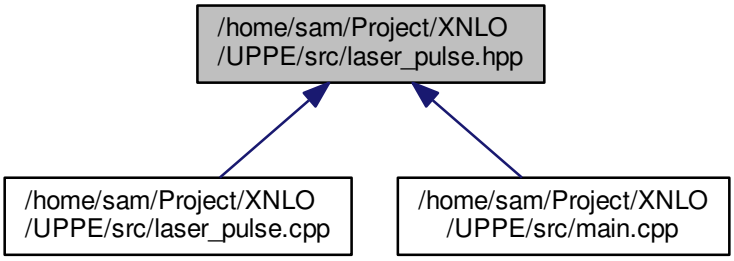
4.18 /home/sam/Project/XNLO/UPPE/src/laser_pulse.hpp File Reference

```
#include "physics_textbook.hpp"
#include "maths_textbook.hpp"
#include "grid_tw.hpp"
#include "grid_rkr.hpp"
#include <mkl.h>
#include "DHT.hpp"
#include "Eigen/Dense"
#include "capillary_fibre.hpp"
#include "keldysh_gas.hpp"
```

Include dependency graph for laser_pulse.hpp:



This graph shows which files directly or indirectly include this file:



Classes

- class laser_pulse

4.19 /home/sam/Project/XNLO/UPPE/src/main.cpp File Reference

```
#include <mpi.h>
#include "maths_textbook.hpp"
#include "physics_textbook.hpp"
#include <mkl.h>
#include "DHT.hpp"
#include "grid_rkr.hpp"
#include "grid_tw.hpp"
#include "laser_pulse.hpp"
#include "capillary_fibre.hpp"
#include "keldysh_gas.hpp"
#include "Eigen/Dense"
#include "IO.hpp"
#include "config_settings.hpp"
#include <iostream>
#include <string>
#include "../../XNLO/lib/XNLO.hpp"
```

Functions

- int main (int argc, char **argv)

4.19.1 Function Documentation

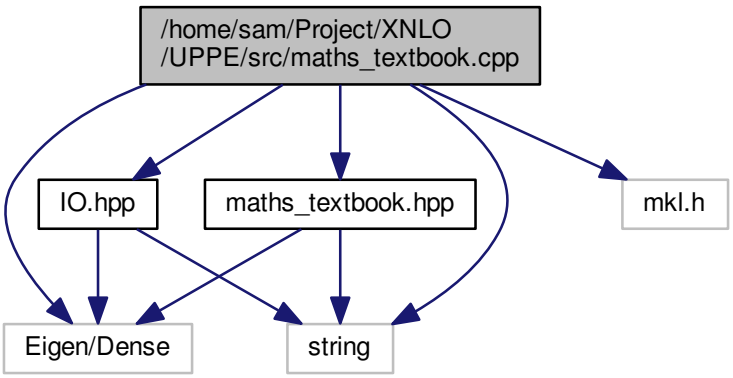
4.19.1.1 int main (int *argc*, char ** *argv*)

Originally created by Patrick Anderson. Modified by Samuel Senior on 10/03/2017. Test enviroment for UPPE codes.

4.20 /home/sam/Project/XNLO/UPPE/src/maths_textbook.cpp File Reference

```
#include "maths_textbook.hpp"
#include "IO.hpp"
#include "Eigen/Dense"
#include <mkl.h>
#include <string>
```

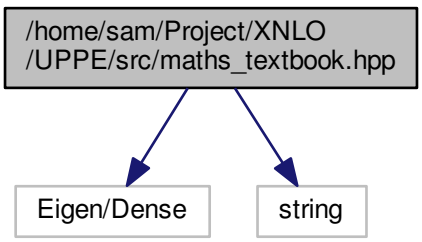
Include dependency graph for maths_textbook.cpp:



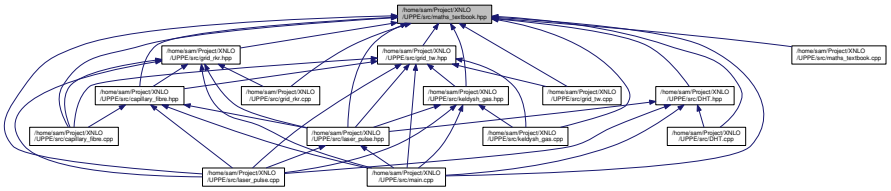
4.21 /home/sam/Project/XNLO/UPPE/src/maths_textbook.hpp File Reference

```
#include "Eigen/Dense"
#include <string>
```

Include dependency graph for maths_textbook.hpp:



This graph shows which files directly or indirectly include this file:



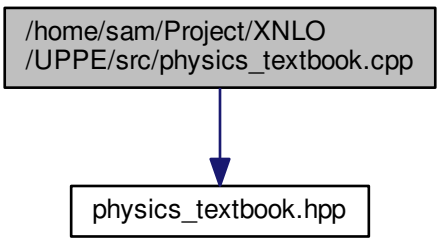
Classes

- class maths_textbook

4.22 /home/sam/Project/XNLO/UPPE/src/physics_textbook.cpp File Reference

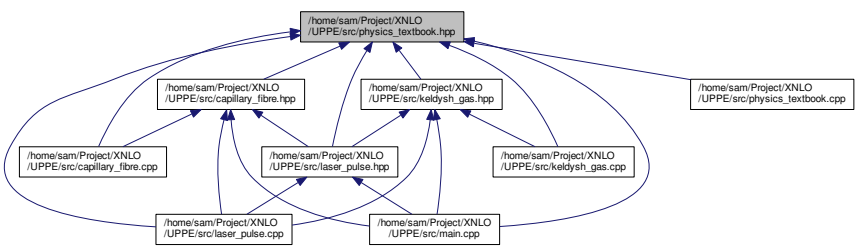
```
#include "physics_textbook.hpp"
```

Include dependency graph for physics_textbook.cpp:



4.23 /home/sam/Project/XNLO/UPPE/src/physics_textbook.hpp File Reference

This graph shows which files directly or indirectly include this file:



Classes

- class physics_textbook

4.24 /home/sam/Project/XNLO/UPPE/src/version.hpp File Reference

Macros

- #define _VERSION_MAJOR 1
- #define _VERSION_MINOR 3
- #define _VERSION_SUBMINOR 0

4.24.1 Macro Definition Documentation

4.24.1.1 #define _VERSION_MAJOR 1

4.24.1.2 #define _VERSION_MINOR 3

4.24.1.3 #define _VERSION_SUBMINOR 0

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