

<p>"Optimally temperature compensated FBG-based sensor dedicated to non-intrusive pipe internal pressure monitoring"</p> <p><u>authors:</u> Laurent Maurin, Nicolas Roussel and Guillaume Laffont (Recent Advances in Optical Fiber Sensors)</p> <p>https://www.frontiersin.org/articles/10.3389/fsens.2022.835140</p> <p>https://hal-cea.archives-ouvertes.fr/cea-03541365</p>
<p>open data in plain text format & gnuplot scripts to reproduce:</p> <p>_ figure 2 (\$ 3.2.2),</p> <p>_ figures 7 & 8 (\$ 5.1),</p> <p>_ figure 10 (\$ 5.2),</p> <p>_ figures 12, 13 & 14 (\$ 5.3).</p>
<p>gnuplot scripts have been validated on both Linux & Microsoft Windows workstations with gnuplot 5.4.2</p> <p>see http://www.gnuplot.info/ for more information</p>

the measurement files and gnuplot scripts to reproduce figures 2, 7, 8, 10, 12, 13 & 14 (without any additional comment) are stored in this archive

all files are encoded in Unicode UTF-8 format, with "line feed" (hexadecimal: 0x0A) end-of-line character, and tabulation for columns separation

all data are distributed in plain text format, and are organized as described hereafter

- _ information to reproduce figure 2 (rows 1 & 2) from § 3.2.2 are located in the "figure_2" sub-directory
- _ information to reproduce figures 7 & 8 from § 5.1 are located in the "figures_7_and_8" sub-directory
- _ information to reproduce figure 10 from § 5.2 are located in the "figure_10" sub-directory
- _ information to reproduce figures 12, 13 & 14 from § 5.3 are located in the "figures_12_13_and_14" sub-directory

- _ "**plot_eps.gnu**" in the top directory is the main gnuplot script which calls the corresponding gnuplot scripts in each sub-directory (named "**plot_eps.gnu**" as well)
- _ open data in plain text format are located in the "**data**" sub-directories, with detailed instructions in each header with physical parameters values & references to the paper in order to reproduce the results
- _ the graphs in Encapsulated Postscript format generated by the gnuplot scripts are located in their corresponding "**graphs**" sub-directories
- _ before running any of the gnuplot scripts, relocate to their respective local sub-directories first

files tree

open_data	# open data root directory
figure_2	# theoretical model relative error for non intrusive P_{int} measurement (§ 3.2.2)
data	# input sub-directory for gnuplot script
data_figure_02_row_1_a.txt	# model relative error data for 3D plot - ø 2" NPS Sch. 80 steel pipe - linear model
data_figure_02_row_1_b.txt	# model relative error data for 3D plot - ø 2" NPS Sch. 80 steel pipe - order 2 model
data_figure_02_row_1_c.txt	# model relative error data for 3D plot - ø 2" NPS Sch. 80 steel pipe - order 3 model
data_figure_02_row_2_a.txt	# model relative error data for 3D plot - ø 4" NPS Sch. 160 steel pipe - linear model
data_figure_02_row_2_b.txt	# model relative error data for 3D plot - ø 4" NPS Sch. 160 steel pipe - order 2 model
data_figure_02_row_2_c.txt	# model relative error data for 3D plot - ø 4" NPS Sch. 160 steel pipe - order 3 model
graphs	# output sub-directory for gnuplot script
figure_02_row_1_a.eps	# 3D plot - ø 2" NPS Sch. 80 steel pipe - linear model - in page 12 (from postprint)
figure_02_row_1_b.eps	# 3D plot - ø 2" NPS Sch. 80 steel pipe - order 2 model - in page 12 (from postprint)
figure_02_row_1_c.eps	# 3D plot - ø 2" NPS Sch. 80 steel pipe - order 3 model - in page 12 (from postprint)
figure_02_row_2_a.eps	# 3D plot - ø 4" NPS Sch. 160 steel pipe - linear model - in page 12 (from postprint)
figure_02_row_2_b.eps	# 3D plot - ø 4" NPS Sch. 160 steel pipe - order 2 model - in page 12 (from postprint)
figure_02_row_2_c.eps	# 3D plot - ø 4" NPS Sch. 160 steel pipe - order 3 model - in page 12 (from postprint)
plot_eps.gnu	# gnuplot script for figure 2 (rows 1 & 2)
figures_7_and_8	# isolated pipe with no external force (Technip Energies facility in Marseille - § 5.1)
data	# input sub-directory for gnuplot script
data_figures_7_and_8_P_nu_0_30.txt	# data for figures 7 & 8 left calculated with standard Poisson's ratio = 0.30
data_figures_7_and_8_P_nu_0_35.txt	# data for figure 8 right calculated with corrected Poisson's ratio = 0.35
data_figures_7_and_8_T.txt	# reference temperature data for figures 7 & 8
graphs	# output sub-directory for gnuplot script
figure_07.eps	# figure 7 (without any comment) in page 26 (from postprint)
figure_08_left.eps	# figure 8 left (without any comment) in page 26 (from postprint)
figure_08_right.eps	# figure 8 right (without any comment) in page 26 (from postprint)
plot_eps.gnu	# gnuplot script for figures 7 & 8
figure_10	# air pressure loop (CEA DES Mercure facility in CEA/Cadarache - § 5.2)
data	# input sub-directory for gnuplot script
data_figure_10_flow.txt	# air flow data
data_figure_10_P.txt	# FBG pressure data
graphs	# output sub-directory for gnuplot script
figure_10_left.eps	# figure 10 left (without any comment) in page 28 (from postprint)
figure_10_right.eps	# figure 10 right (without any comment) in page 28 (from postprint)
plot_eps.gnu	# gnuplot script for figure 10
figures_12_13_and_14	# water pressure loop (CEA DES BEARN 2 facility in CEA/Saclay - § 5.3)
data	# input sub-directory for gnuplot script
data_figure_12_C1.txt	# data for figures 12 left & right (sensor C1)
data_figure_12_C2.txt	# data for figure 12 right (sensor C2)
data_figure_12_C3.txt	# data for figure 12 right (sensor C3)
data_figure_12_C1_C2_C3.txt	# averaged data for figure 12 right (sensors C1, C2 & C3)
data_figure_13_C1.txt	# data for figures 13 left & right (sensor C1)
data_figure_13_C2.txt	# data for figure 13 right (sensor C2)
data_figure_13_C3.txt	# data for figure 13 right (sensor C3)
data_figure_13_C1_C2_C3.txt	# averaged data for figure 13 right (sensors C1, C2 & C3)
data_figure_13_TT204.txt	# reference temperature data for figures 13 left & right
data_figure_14_C13.txt	# data for figures 14 left & right (sensor C13)
data_figure_14_C14.txt	# data for figure 14 right (sensor C14)
data_figure_14_C13_C14.txt	# averaged data for figure 14 right (sensors C13 & C14)
data_figure_14_FT201.txt	# water flow data for figures 14 left & right
data_figure_14_TT201.txt	# reference temperature data for figures 14 left & right
graphs	# output sub-directory for gnuplot script
figure_12_left.eps	# figure 12 left (without any comment) in page 30 (from postprint)
figure_12_right.eps	# figure 12 right (without any comment) in page 30 (from postprint)
figure_13_left.eps	# figure 13 left (without any comment) in page 30 (from postprint)
figure_13_right.eps	# figure 13 right (without any comment) in page 30 (from postprint)
figure_14_left.eps	# figure 14 left (without any comment) in page 31 (from postprint)
figure_14_right.eps	# figure 14 right (without any comment) in page 31 (from postprint)
plot_eps.gnu	# gnuplot script for figures 12, 13 & 14
plot_eps.gnu	# master gnuplot script
835140_frontiers_postprint.pdf	# provisional LaTeX manuscript (postprint)
README.txt	# README file (this file in TEXT format)
README.pdf	# README file (this file in one page and PDF format)