**“Grid Interpolator v.3.0”: documentation file**

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## Acknowledgments

The minor tool “Grid Interpolator v.3.0” has been financed by the Research Fund for the Italian Electrical System (for “Ricerca di Sistema -RdS-”), at different stages:

* under the Contract Agreement between RSE SpA and the Italian Ministry of Economic Development for the of RdS period 2012-2014, in compliance with the Decree of November 9, 2012.
* under the Contract Agreement between RSE SpA and the Italian Ministry of Economic Development for the RdS period 2015-2017, in compliance with the Decree of 21 April 2016. Reference project: ‘A.5 - Sicurezza e vulnerabilità del sistema elettrico’, Frigerio A. et al., 2015–2018;
* under the Contract Agreement between RSE S.p.A. and the Ministry of Economic Development - General Directorate for the Electricity Market, Renewable Energy and Energy Efficiency, Nuclear Energy in compliance with the Decree of April 16, 2018; Project: “2.5 Modelli e strumenti di intervento, anche preventivo, per la difesa e il miglioramento della sicurezza e della resilienza delle reti” - Ricerca di Sistema (2.5 Models and action tools for the safety and resilience of the power grids - Research on the Italian Energy System); Project Manager: Francesco Apadula (formerly Antonella Frigerio); Agreement between the Italian Ministry of Economic Development and RSE SpA 2019-2021;
* by the Research Fund for the Italian Electrical System under the Contract Agreement between RSE S.p.A. and the Ministry of Economic Development - General Directorate for the Electricity Market, Renewable Energy and Energy Efficiency, Nuclear Energy in compliance with the Decree of April 16th, 2018. Project Managers: Stefano Maran, Giovanni Pirovano.

## Description and references

Grid Interpolator v.3.0 (RSE SpA) is written by Andrea Amicarelli.

“Grid Interpolator v.3.0” is free software released under the GNU General Public License (Free Software Foundation).

## Tutorials

Grid Interpolator is validated on 4 tutorials (following sub-sections), each one having possible variants. Some of the tutorials are published on International Journals or they are associated with paper preprints. Other minor test cases only represent very simple configurations.

## “db\_Alpe\_Gera”

This tutorial is described in Amicarelli & Agate (2017, [3]). This project report is Open-Access and also includes a synthetic English version.

## “db\_Alpe\_Gera\_Lanzada\_substations”

This tutorial is described in Amicarelli (2018, [1]). This project report is Open-Access and also includes a synthetic English version.

## “edb\_ICOLD”

This tutorial is described in Amicarelli et al. (2017, [2]). The paper version available on ResearchGate might help in case the published version is unavailable.

## “Vajont\_dof\_Ymax”

This tutorial is described in Amicarelli et al. (2022, [5]).

## References

1. Amicarelli A., 2018; Modellazione fluidodinamica SPH 3D per la propagazione di inondazioni in ambiente urbano e valutazioni di supporto ai fini della gestione del sistema elettrico in aree soggette a rischio idrogeologico; RSE SpA, Ricerca di Sistema, Deliverable 18001519.
2. Amicarelli A., B. Kocak, S. Sibilla, J. Grabe; 2017; A 3D Smoothed Particle Hydrodynamics model for erosional dam-break floods; International Journal of Computational Fluid Dynamics, 31(10):413-434; DOI 10.1080/10618562.2017.1422731
3. Amicarelli A., G. Agate; 2017; Modellazione fluidodinamica SPH per la propagazione di inondazioni in presenza di opere di protezione; RSE SpA, Ricerca di Sistema, Deliverable 17002102.
4. SPHERA (RSE SpA), <https://github.com>
5. A. Amicarelli and et al., “SPH modelling of the Vajont dam-overtopping flood with wall functions adapted to flash floods and weir-like inlet sections,” p. preprint, 2022.