

## CURRICULUM VITAE

### OLIVIER COUTIER-DELGOSHA

*Associate Professor Virginia Tech / Full Professor Arts et Metiers ParisTech<sup>1</sup>*

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*42 years old, Married, 4 children*

### ADDRESS

Virginia Polytechnic Institute, Department of Aerospace and Ocean Engineering, Blacksburg, VA 24061  
Arts et Metiers ParisTech, Campus of Lille, 8 boulevard Louis XIV, 59046 Lille cedex, France

### EDUCATION

**Graduated from French Grande Ecole ENSHMG<sup>2</sup>**, first-class honors, June 1997.

**MS**, Mechanical Engineering (option Fluid Mechanics), INPG<sup>3</sup>, first-class honors, June 1997.

**Ph.D.**, Mechanical Engineering, INPG, highest honors and congratulations of the Committee, November 2001. Thesis: "Numerical modeling of cavitating flows: study on unsteady behaviors and three-dimensional application to turbomachinery".

### APPOINTMENTS

<b>Virginia Tech</b>	Associate Professor, Aerospace & Ocean Engineering	2017 - present
<b>Virginia Tech</b>	Adjunct Professor with PI privilege in the AOE Dept	2016
<b>LML</b>	Director <i>(Laboratoire de Mécanique de Lille, 75 faculty, ~100 Ph.D. students, ~130 publications per year in refereed journals)</i>	2014 – 2016
<b>Arts &amp; Metiers ParisTech</b>	Full Professor, Mechanical Engineering	2011 - present
<b>LML</b>	Deputy Director	2010-2013
<b>Arts &amp; Metiers ParisTech</b>	Associate Professor, Mechanical Engineering	2008 – 2011
<b>Arts &amp; Metiers ParisTech</b>	Assistant Professor, Mechanical Engineering	2004 – 2008

### HONORS AND AWARDS

**Fulbright Grant** (12 months), Visiting professor at Johns Hopkins University, Department of Mechanical Engineering, 2014

**Post-doctoral Grant** awarded by the CNES (French Space Agency), 2002-2003

**Research Grant** from Ministry of Education and Research, 1999-2001

### SCIENTIFIC PUBLICATIONS

**Refereed Journals:** 36 publications + 6 submitted.

**Conferences:** 64 papers published in proceedings of international conferences

**(Sources Scopus on 15/11/2016):** 966 citations, h index =17

**(Sources Google Scholar on 15/11/2016):** 1558 Citations (1026 since 2011), h index = 21 (16 since 2011), index i10 =30 (25 since 2011)

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<sup>1</sup> See <http://www.ensam.eu/en/>

<sup>2</sup> Now ENSE<sup>3</sup>, Ecole Nationale Supérieure de l'Energie, l'Eau et l'Environnement, see <http://ense3.grenoble-inp.fr/>

<sup>3</sup> Institut National Polytechnique de Grenoble, see [http://www.grenoble-inp.fr/grenoble-institute-of-technology-9224.kjsp?RH=INPG\\_FR](http://www.grenoble-inp.fr/grenoble-institute-of-technology-9224.kjsp?RH=INPG_FR)

## COLLECTIVE RESPONSIBILITIES

**Chairman of the ISROMAC 16 & ISIMet** joint conferences in 2016 (Honolulu, April 10-15 2016, 300 participants) and ISROMAC 17 (December 16-21, 2017)

**Associate Editor** for the Journal of Fluids Engineering between 2008 and 2016

**Reviewer of 66 papers** for the J. of Fluids Engineering, JFM, Physics of fluids, Computers and fluids, EJMB/Fluids, the Int. J. for Num. Methods in Fluids, Exp. Thermal and Fluid Science...

**Referee or examiner in 21 committees of PhD defense** since 2008

## FUNDING

**PI of TEMPCav**, ONR NICOP project (Program officer Ki-Han Kim) about the measurement of temperature during the collapse of vapor bubbles, inside the bubble and in the liquid (\$245000).

**Coordinator and Principal investigator** of scientific collaboration contracts with leading industry partners - SNECMA (Motorist of Ariane V), CNES (French Space Agency), EDF (Electricity of France), EuroTunnel, CETIM (Group of manufacturers of hydraulic devices) - for a total funding exceeding 2.5 M€ (1.7 M€ since 2009).

**Coordinator of HYDROSTOCK (2010-2014), funded by ADEME** (French Agency for environment) devoted to the development of a system of energy storage based on air compression with liquid moved by pump-turbines (310 k€).

**Coordinator of CRYOFLEX (2013-2015), funded by INNOCOLD** (French Institute of Cryogenic technology) devoted to the analysis of effective roughness in cryogenic flexible pipes (120 k€).

**Coordinator of DNSCAV (2012-2016), funded by DGA** (French Defence Procurement Agency), devoted to the realization of DNS and LES simulations of cavitating flows (120 k€)

**Coordinator for the LML lab of FDRAINH (2013-2016) initiated by the French Naval Academy, funded by ANR** (National Research Agency) focusing on ship drag reduction by controlled air injection (300 k€)

**Three research grants for PhD students** obtained from the Ministry of Education in the last 10 years.

## CURRENT RESEARCH AREAS *(See the Research statement for more details)*

*Keywords: Multiphase flows, Multi-component flows, Cavitation, Multi-scale phenomena, Environment, X-ray imaging, Direct numerical simulations*

**Modeling of cavitating flows:** the objective is to improve the physical models (cavitation, turbulence) involved in CFD of cavitating flows, to account for their unsteady, turbulent and compressible character. Present work focuses on DNS and LES simulations of cavitating flows.

**Physical mechanisms of unsteady hydrodynamic cavitation:** this activity aims to improve the understanding of the large scale turbulent interactions between liquid and vapor, often by the development of original measurement techniques (recently fast X-ray imaging & LIF PIV).

**Cavitating behavior of rotating machinery:** this work focuses on cavitation in hydraulic systems and pumps, especially rocket engine turbopumps. I am currently the PI of a 400 k€ project funded by SNECMA, devoted to the analysis the effects of the pump geometry on the flow instabilities due to cavitation, and the investigation of the internal flows in cavitating conditions.

**Small-scale mechanisms:** These topics are the most recent ones, in the scope of active efforts to include emerging applications of cavitation, associated with hot industrial concerns. Cavitation erosion and heat exchanges during phase changes are investigated in the scope of a NICOP ONR project (2016-19). A study of cavitation induced nano oil/water emulsion has been also initiated.

**Environmental flows.** Investigation of oil/water mixture behaviors in the scope of oil spilled in ocean or lakes has been initiated in the scope of my 1-year stay in Johns Hopkins University in 2014 as

visiting Professor. More generally, oil spill introduces a broad range of problems related to environmental concerns, such as oil flows, mud flows and ground flows.

## MAIN TECHNICAL CONTRIBUTIONS

(Numbers in bold characters refer to the list of publications hereafter)

Analysis of the effects of turbulence modeling on the numerical simulation of unsteady sheet cavitation [2] 39 citations, [4] 312 citations, [6] 164 citations.

Mathematical derivation of the equations currently used in CFD of cavitation, with underlying assumptions including the notion of “two-phase fluid particle” [17] 78 citations.

Theoretical and numerical comparison of the existing cavitation models, showing how similar the models are, despite their various formulations [20] 33 citations.

Analysis of the stability of the preconditioned Navier-Stokes equations associated with a cavitation model [8] 36 citations.

Physical analysis of rotating cavitation in rocket engine inducers [7] 37 citations, [26], [28].

Coupling of CFD simulation and erosion model to predict the damage due to cavitation erosion [22] 47 citations.

Development and validation of fast X-ray imaging (including data acquisition, image post-processing and validation) for simultaneous measurement of void fraction and velocities in both phases. Analysis of the structure and dynamics of cavitating flows [17] 78 citations, [39] submitted to JFM

Investigation the internal structure of cavitation with an original endoscopic technique, analysis of the morphology of the mixture according to the void fraction [15] 41 citations

Measurements of temperature variations in the liquid surrounding a cavitation bubble by IR thermography [33] 12 citations

Measurement of the speed of sound in a cavitation homogeneous mixture and assessment of a good agreement with previous theoretical models [25] 10 citations

First Direct Numerical Simulation (DNS) of cavitating flow... in 2016 (on going PhD work)

## RESEARCH GROUP

### PRESENT MEMBERS

**MAHAMADOU ADAMA MAIGA**, *post-doctoral fellow*, analysis of drag reduction by air injection (project FDRAINH with the French Naval Academy, 2013-2016)

**MEROUANE HAMDI**, *Post-doctoral fellow*, Measurement of temperature inside and outside a cavitation bubble during its growth and collapse (ONR NICOP project 2016-2018)

**ILYASS KHLIFA**, *Post-doctoral fellow*, Analysis of the instabilities due to cavitation in rocket engine turbopump inducers (funded by SNECMA & CNES, 2014-2019)

**AURÉLIA CHARRIER**, *Post-doctoral fellow*, Temperature measurements in two-phase cryogenic flows for space applications (funded by SNECMA & CNES, 2016-2018)

**CHEBLI REZKI**, *Post-doctoral fellow*, Analysis of the influence of turbulence modeling on CFD simulations of cavitating flows (funded by EDF)

**MOUHAMED GHANDOUR**, *PhD student*, Direct numerical simulations of oil / water flows: application to configurations of oil spills. (Cotutelle with JHU, 2016-2018).

**ANTON ZNIDARCIC**, *PhD Student*, DNS & LES simulations of cavitating flows (project DNSCav 2012-16)

**LAURA MATTEO**, *PhD student*, 1D modelling of pumps in the CATHARE code for nuclear engineering (funded by the CEA, AVERA, EDF, SNECMA and CETIM, 2015-2018)

### **PREVIOUS MEMBERS OF THE GROUP**

- AMIRHOSSEIN FIROZI, *MS student*, 2016, LES simulations of cavitating flows.
- YUTAO ZHANG, *MS student*, 2016, Optimization of the RANS modelling of cavitating flows.
- AYOUB ATTIGUI, *MS student*, 2016 Analysis of the cavitation instabilities in a rocket engine pump inducer
- MICKAEL ABDILAH, *MS student*, 2015, Direct numerical simulations of rain drops impacting oil slicks.
- ABRANI DIMOUNI, *PhD student*, 2012 – 2015, investigation of the thermal effects associated with cavitation.
- VINCENT BELLANGER, *MS student*, 2014, Study of cavitation induced nano-emulsion.
- VLISSIS LEONTIDIS, *Post-doctoral fellow*, 2013-2015, investigation of the effects of phase change on the effective roughness in cryogenic flexible pipes, now post-doc in an other group of the laboratory.
- AMÉLIE DANLOS, *Post-doctoral fellow*, 2012-2013, Cavitation regime detection through Proper Orthogonal Decomposition, now assistant professor at CNAM
- STEFANIA DELLA GATTA, *Post-doctoral fellow*, 2006-2007, Development of a 3D unstructured solver for the simulation of two-phase flows, then project manager in GE, recently recruited by SNECMA
- ILYASS KHLIFA, *PhD student*, 2011-2014, Fast-X-ray imaging in two-phase flows, now Post-doctoral fellow in my Group
- JEAN-ELIE MEHAL, *PhD student*, 2009-2014, Study of the cavitation instability on a grooved Venturi profile (in parallel to his job of pilot).
- EGOI ORTEGO, *PhD student*, 2011-2013, development of a system of energy storage based on air compression with liquid moved by pump-turbines, now Post-doctoral fellow at *Mines ParisTech*<sup>4</sup>
- SOBHI FRIKHA, *PhD student*, 2007-2010, Analysis of existing physical cavitation models.
- SEBASTIEN DUPLAA, *PhD student*, 2006-2008, Transient cavitation during fast start-ups of pumps, now Assistant professor at ISAE<sup>5</sup>
- HIVA SHAMSBORHAN, *PhD student*, 2006-2009, Measurement of the speed of sound in a cavitating flow, now Assistant professor at ICAM<sup>6</sup>
- SIMON MELOT, *MS student*, 2013, Analysis of thermal effects in hydrodynamic cavitation.
- PIERRE DAUDIN, *MS student*, 2012, Study of a racing sailboat: Analysis of the influence of the foil geometry on the performance
- NORBERTO ARAMBURU, *MS student*, 2011, Experimental measurement of the effective viscosity in a cavitating flow.
- SALAS SELCUK, *MS student*, 2011, Analysis of the influence of the turbulence modeling on the simulation of unsteady cavitating flows.
- ROMAIN DELION, *MS student*, 2009, Experimental study of unsteady cavitation by X-ray imaging.
- NICOLAS BUTEL, *MS student*, 2007, Numerical simulation of the instabilities in a vaneless diffuser of centrifugal pump.
- ARNAULT WOLF, *MS student*, 2007, 3D CFD of the unsteady flow in a squirrel-cage fan.
- SOBHI FRIKHA, *MS student*, 2006, Numerical modeling of cavitating flows with several existing cavitation models.
- FRÉDÉRIC BOURGEOIS, *MS student*, 2005, Numerical simulation of the flow in a 3D centrifugal pump.
- MOHAMMED RABAÏ, *MS student*, 2005, Analysis of the influence of the geometrical definition on the simulation of a rocket engine turbopump inducer.

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<sup>4</sup> See <http://www.mines-paristech.eu/>

<sup>5</sup> Institut Supérieur de l'Aéronautique et de l'Espace, see <http://www.isae.fr/en>

<sup>6</sup> Institut Catholique d'Arts et Métiers, See <http://www.icam.fr/en/icam-3>

## LIST OF PUBLICATIONS

(PhD students and Post-doctoral fellows of my Research Group underlined)

### REFEREED JOURNALS

1. **COUTIER-DELGOSHA O.**, REBOUD J.L., FORTES-PATELLA R., REBOUD J.L. (2002)  
Numerical study of the effect of the leading edge shape on cavitation around inducer blade sections, *Int. J. JSME, Série B* **45**, No. 3.
2. **COUTIER-DELGOSHA O.**, FORTES-PATELLA R., REBOUD J.L. (2002)  
Simulation of unsteady cavitation with a two-equation turbulence model including compressibility effects, *J. of Turbulence* **3**, 058, <http://jot.iop.org>.
3. LOHRBERG H., STOFFEL B., FORTES-PATELLA R., **COUTIER-DELGOSHA O.**, REBOUD J.L. (2002)  
Numerical and experimental investigation on the cavitating flow in a cascade of hydrofoils, *Experiments in Fluids* **33/4**: pp 578-586.
4. **COUTIER-DELGOSHA O.**, FORTES-PATELLA R., REBOUD J.L. (2003)  
Evaluation of the turbulence model influence on the numerical simulations of unsteady cavitation, *J. of Fluids Engineering* **125**, pp. 38-45.
5. **COUTIER-DELGOSHA O.**, FORTES-PATELLA R., REBOUD J.L., HOFMANN M., STOFFEL B. (2003)  
Experimental and numerical studies of a centrifugal pump with two-dimensional curved blades in cavitating conditions, *J. of Fluids Engineering* **125/6**, pp. 970-978.
6. **COUTIER-DELGOSHA O.**, REBOUD J.L., DELANNOY Y. (2003)  
Numerical simulation of unsteady cavitating flow, *Int. J. for Numerical Methods in Fluids* **42/5**, pp. 527-548.
7. **COUTIER-DELGOSHA O.**, COURTOT Y., JOUSSELLIN F., REBOUD J-L. (2004)  
"Numerical simulation of the unsteady cavitation behavior of an inducer blade cascade"  
*AIAA Journal* **42/3**, pp. 560-542.
8. **COUTIER-DELGOSHA O.**, FORTES-PATELLA R., REBOUD, J.L., HAKIMI N., HIRSCH C. (2005)  
Stability of preconditioned Navier-Stokes equations associated with a cavitation model, *Computers and Fluids*, **34/3**, pp. 319-349.
9. **COUTIER-DELGOSHA O.**, DEVILLERS J-F., PICHON T., LERICHE M. (2005)  
Effect of the wall roughness on unsteady sheet cavitation, *J. of fluids Engineering* **127/4**, p. 726-733.
10. **COUTIER-DELGOSHA O.**, FORTES-PATELLA R., REBOUD J.L., HAKIMI N., HIRSCH C. (2005)  
Numerical simulation of cavitating flow in 2D and 3D inducer geometry, *Int. J. for Numerical Methods in Fluids* **48/2**, p. 135-167.
11. LEROUX J-B., **COUTIER-DELGOSHA O.**, ASTOLFI J-A. (2005)  
A joint experimental and numerical analysis of mechanisms associated to unsteady cavitation, *Physics of fluids* **17/5**, paper 052101.
12. **COUTIER-DELGOSHA O.**, MOREL P., FORTES-PATELLA R., REBOUD J.L. (2005)  
Numerical simulation of turbopump inducer cavitating behavior, *Int. J. of Rotating Machinery* **2005/2**, p. 135-142.
13. DEVILLERS J-F., **COUTIER-DELGOSHA O.** (2005)  
Influence of the nature of the injected gas in the edgetone phenomenon, *Journal of Fluids and Structures* **21**, pp. 133-149.
14. **COUTIER-DELGOSHA O.**, FORTES-PATELLA R., REBOUD J.L., STUTZ B. (2005)  
Unsteady cavitation in a Venturi type section, *Multiphase Science and Technology* **16**, case 33.

15. COUTIER-DELGOSHA O., DEVILLERS J-F., PICHON T., VABRE A., WOO R. (2006)  
Inner composition and dynamics of a cavitation sheet, *Physics of Fluids* **18/1**, paper 017103.
16. COUTIER-DELGOSHA O., DEVILLERS J-F., CHAIGNE A. (2006)  
Edge-tone instability: effect of the gas nature and investigation of the feed-back mechanism, *Acta Acustica* **92/2**, pp. 236-246.
17. COUTIER-DELGOSHA O., STUTZ B., VABRE A., LEGOUPIL S. (2007)  
Analysis of the cavitating flow structure by experimental and numerical investigations, *J. of Fluid Mechanics* **578**, pp. 171-222.
18. COUTIER-DELGOSHA O., DENISET F., ASTOLFI J.A., LEROUX J-B. (2007)  
Numerical prediction of the cavitating flow on a two-dimensional symmetrical hydrofoil and comparison with experiments, *J. of Fluids Engineering* **129/3**, pp. 279–292.
19. FORTES-PATELLA R., COUTIER-DELGOSHA O., PERRIN J., REBOUD J-L. (2007)  
A numerical model to predict unsteady cavitating flow behaviour in inducer blade cascades, *J. of Fluids engineering* **129/2**, pp. 128–135.
20. FRIKHA S., COUTIER-DELGOSHA O., ASTOLFI J-A. (2008)  
Numerical investigations of the cavitating flow on two-dimensional hydrofoils: physical modeling methodologies, *Int. J. of Rotating Machinery* **2008**, Article ID 146234.
21. DAZIN A., COUTIER-DELGOSHA O., DUPONT P., COUDERT S., CAIGNAERT G., BOIS G. (2009)  
Rotating stall in the vaneless diffuser of a radial flow pump, *J. of thermal Science* **17/4**, pp. 368-374.
22. DULAR M., COUTIER-DELGOSHA O. (2009)  
Numerical Modelling of Cavitation Erosion, *Int. J. for Numerical Methods in Fluids* **61**, pp. 1388-1410.
23. VABRE A., GMAR M., COUTIER-DELGOSHA O., DAZIN A., LEE WK, FEZZAA K. (2009)  
Synchrotron ultra-fast X-ray imaging of a cavitating flow in a Venturi profile, *Nuclear Instruments and Methods in Physics Research, Section A* **607/1**, pp. 215-217.
24. DUPLAA S., COUTIER-DELGOSHA O., DAZIN A., ROUSSETTE O., BOIS G., CAIGNAERT G., (2010)  
Experimental study of cavitating centrifugal pump during fast start-up, *J. of Fluids engineering* **132/2**, 021301.
25. SHAMSBORHAN H., COUTIER-DELGOSHA O., CAIGNAERT G., ABDEL NOUR F. (2010)  
Experimental determination of the speed of sound in cavitating flow, *Exp in fluids* **49/6**, pp. 1359-1373.
26. COUTIER-DELGOSHA O., CAIGNAERT G., BOIS, G. LEROUX J-B. (2012)  
Influence of the blade number on inducer cavitating behavior, *J. of Fluids Engineering* **134/8**.
27. COUTIER-DELGOSHA O., DAZIN A., CAIGNAERT G., BOIS G. (2012)  
Analysis of cavitation instabilities in a four blade inducer, *Int. J. for Rotating Machinery* **2012**, Article ID 213907.
28. DUPLAA S., COUTIER-DELGOSHA O., DAZIN A., VABRE A., BOIS G. (2012)  
X-Ray Measurements in a Cavitating Centrifugal Pump during Fast Start-ups, *J of Fluids engineering* **135/4**, paper 041204.
29. DULAR M., KHLIFA I., FUZIER S., COUTIER-DELGOSHA O., ADAMA MAIGA M. (2012)  
Scale effects on unsteady cloud cavitation, *Experiments in Fluids* **53/5**, pp. 1233-1250.
30. DULAR M., COUTIER-DELGOSHA O., PETKOVSEK M. (2013)  
Observations of cavitation erosion pit formation, *Ultrasonics Sonochemistry* **20/4**, pp 113-1120.
31. DULAR M., COUTIER-DELGOSHA O. (2013)  
Thermodynamic effects during Expansion and Collapse of a Single Cavitation Bubble, *J. of Fluid Mechanics* **736**, pp. 44-66.

32. DANLOS A., MEHAL JE., RAVELET F., COUTIER-DELGOSHA O. & BAKIR F. (2014)  
Study of the cavitation instability on a grooved Venturi profile, *J. of Fluid eng.* **136/10**, paper 101302.
33. DANLOS A., RAVELET F., COUTIER-DELGOSHA O. & BAKIR F. (2014)  
Cavitation regime detection through Proper Orthogonal Decomposition: dynamics analysis of the sheet cavity on a grooved convergent-divergent nozzle, *Int. Journal of Heat and Fluid Flow* **47**, pp. 9-20.
34. ADAMA MAIGA M., COUTIER-DELGOSHA O., BUISINE D. (2014)  
Interactions by exchange of volume between two spherical bubbles, *Int. J. of Applied Mechanics* **06/06**, pp14500.
35. ADAMA MAIGA M. & COUTIER-DELGOSHA O. (2016)  
Cavitation in a hydraulic system: The influence of the distributor geometry on cavitation inception and study of the interactions between bubbles, *Int. Journal of Engine Research* **17/5**, pp. 543-555.
36. ADAMA MAIGA M. & COUTIER-DELGOSHA O.  
Analysis of the re-entrant jet to twin vortex flow regimes transition in ventilated cavitation, in preparation for *the European J. of Mechanics/B*.
37. DUPLAA S., COUTIER-DELGOSHA O., DAZIN A., BOIS G.  
Modeling of the fast start-up of a centrifugal pump operating in cavitating conditions, in preparation for *the Journal of Fluids engineering*.
38. , KHLIFA I., FUZIER S., HOCEVAR M., VABRE A., FEZZA K., COUTIER-DELGOSHA O.  
Fast X-ray imaging for velocity measurements in cavitating flows, in preparation for *the J. of Fluid Mechanics*.
39. KHLIFA I., FUZIER S., COUTIER-DELGOSHA O.  
Analysis of the dynamics of the liquid and the vapor phases in cavitating flows, in preparation for *the J. of Fluid Mechanics*.
40. FUZIER S., COUTIER-DELGOSHA O., COUDERT S.  
Two phase velocity measurements using LIF-PIV inside the cavitation sheet generated in a venturi, in preparation for *the J. of Fluid Mechanics*.
41. ZNIDARCIC A., COUTIER-DELGOSHA O.  
A new algorithm for direct numerical simulation of cavitating flows, in preparation for *the Int. J. for Numerical Methods in Fluids*.
42. CHEBLI R., COUTIER-DELGOSHA O., AUDEBERT B.  
Influence of the turbulence modelling on the simulation of cloud cavitation, in preparation for *the Int. J. for Numerical Methods in Fluids*.

#### PROCEEDINGS OF INTERNATIONAL CONFERENCES

43. STUTZ B., REBOUD J-L., COUTIER O., FAYOLLE J., ZARA H. (1997)  
Unsteady cavitation: experiment and modelling, Proceedings of the GAMM conference, Section 12 - Multiphase Flows, Regensburg, March 1997.
44. REBOUD JL., STUTZ B, COUTIER O. (1998)  
Two-phase flow structure of cavitation: experiment and modelling of unsteady effects, Proceedings of the 3rd Int. Symposium on Cavitation CAV98, Grenoble, April 1998.
45. COUTIER-DELGOSHA O., REBOUD J.L., ALBANO G (2000)  
Numerical simulation of the unsteady cavitation behavior of an inducer blade cascade, Proceedings of the 2000 ASME Fluids Engineering Summer Meeting, Boston, USA, June 11-15, 2000.
46. COUTIER-DELGOSHA O., FORTES-PATELLA R., REBOUD J.L., HAKIMI N. (2001)  
Numerical simulation of cavitating flow in an inducer geometry, Proceedings of the 4<sup>th</sup> European Conf. on Turbomachinery, IMECHE, Firenze, Italy, March 20-23, 2001.

47. **COUTIER-DELGOSHA O., FORTES-PATELLA, R., REBOUD J.L. (2001)**  
Evaluation of the turbulence model influence on the numerical simulations of unsteady cavitation, Proceedings of the 2001 ASME FEDSM, New Orleans, USA, May 29 – June 3, 2001.
48. **COUTIER-DELGOSHA O., REBOUD J.L., FORTES-PATELLA R. (2001)**  
Numerical study of the effect of the leading edge shape on cavitation around inducer blade sections, Proceedings of the 4<sup>th</sup> Int. Symp. on Cavitation, Pasadena, USA., June 2001.
49. **HOFMANN M., STOFFEL B., COUTIER-DELGOSHA O., FORTES-PATELLA R, REBOUD J-L. (2001)**  
Experimental and numerical studies of a centrifugal pump with 2D curved blades in cavitating conditions, Proceedings of the 4<sup>th</sup> Int. Symp. on Cavitation, Pasadena, USA., June 2001.
50. **JOUSSELIN, F., COURTOT Y., COUTIER-DELGOSHA O., REBOUD J.L. (2001)**  
Cavitating inducer instabilities: exp. analysis and numerical simulation of unsteady flow in blade cascade, Proceedings of the 4<sup>th</sup> Int. Symp. on Cavitation, Pasadena, USA, June 2001.
51. **COUTIER-DELGOSHA O., MOREL P., FORTES-PATELLA R., REBOUD J.L. (2002)**  
Numerical simulation of turbopump inducer cavitating behavior, Proceedings of the 9<sup>th</sup> int. Conf. on Rotating Machinery, Honolulu, USA, February 2002.
52. **COUTIER-DELGOSHA O., FORTES-PATELLA R., REBOUD J.L. (2002)**  
3D numerical simulation of pump cavitating behavior, Proceedings of the 6<sup>th</sup> Int. Symp. in Advances in Numerical Modeling of Aerodynamics and Hydrodynamics in Turbomachinery, ASME FEDSM, Montreal, Canada, July 2002.
53. **COUTIER-DELGOSHA O., POUFFARY B., FORTES-PATELLA R., REBOUD JL., ARCHER A., COMBES J-F. (2002)**  
Cavitation performance of a centrifugal pump: numerical and experimental investigations, Proceedings of the 21<sup>st</sup> IAHR Symp. on Hydraulic Machinery and Systems, Lausanne, Suisse, September 2002.
54. **POUFFARY B., COUTIER-DELGOSHA O., FORTES-PATELLA R., REBOUD JL., LAFFITE S., NGUYEN JM. (2002)**  
Evaluation of the effects of cavitation on the flow in a centrifugal pump: analysis of the breakdown mechanisms, Proceedings of the 21<sup>st</sup> IAHR Symp. on Hydraulic Machinery and Systems, Lausanne, Switzerland, September 2002.
55. **COUTIER-DELGOSHA O., REBOUD J-L., COURTOT Y., FORTES-PATELLA, R. (2002)**  
A numerical model to predict unsteady cavitating flow behavior in inducer blade cascades, Proceedings of the 4<sup>th</sup> international conf. on Launcher Technology, Liège, Belgium, December 2002.
56. **COUTIER-DELGOSHA O., FORTES-PATELLA R., REBOUD J-L., POUFFARY B. (2002)**  
3D numerical simulations of pump cavitating behavior, Proceedings of the 4<sup>th</sup> international conf. On Launcher Technology, Liège, Belgium, December 2002.
57. **COUTIER-DELGOSHA O., DEVILLERS J-F. (2003)**  
Experimental and Numerical study of the cavitating flow on a hydrofoil, Proceedings of the 2003 ASME Fluids Engineering Summer Meeting, Honolulu, USA, July 2003.
58. **COUTIER-DELGOSHA O., PERRIN J., R. FORTES-PATELLA, REBOUD J-L. (2003)**  
A numerical model to predict unsteady cavitating flow behaviour in inducer blade cascades, Proceedings of the 5<sup>th</sup> Int. Symp. on Cavitation, Osaka, Japan, November 2003.
59. **LEROUX J-B., COUTIER-DELGOSHA O., ASTOLFI J-A. (2003)**  
A joined experimental and numerical study of mechanisms associated to instability of partial cavitation on two-dimensional hydrofoil, Proceedings of the 5<sup>th</sup> Int. Symp. on Cavitation, Osaka, Japan, November 2003.
60. **COUTIER-DELGOSHA O., ASTOLFI J-A. (2003)**  
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