

## LIST OF PUBLICATIONS

### PROF. T. MAGIN

#### Ph.D. thesis

*A model for inductive plasma wind tunnels.*

Magin, Thierry E., Free University of Brussels, von Karman Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium, 2004.

#### Book chapters (7)

[BC1] *Fundamentals of hypersonic flight, properties of high temperature gases.*

Barbante, Paolo; Magin, Thierry E., Critical Technologies for Hypersonic Vehicles Development, Gaitonde, D. V.; Fletcher, D. G., Rhode-Saint-Genèse, Belgium, VKI LS 2004-08, 2004.

[BC2] *Kinetic and transport theory of plasmas.*

Magin, Thierry E.; Graille, Benjamin; Massot, Marc, Course on Hypersonic Entry and Cruise Vehicles, Chazot, O.; Magin, T. E., Stanford, California, USA, VKI CW 2008-01, 2008.

[BC3] *Detailed and simplified kinetic mechanisms for high enthalpy air flows.*

Bourdon, Anne; Bultel, Arnaud; Panesi, Marco; Magin, Thierry E., Course on Hypersonic Entry and Cruise Vehicles, Chazot, O.; Magin, T. E., Stanford, California, USA, VKI CW 2008-01, 2008.

[BC4] *Kinetic theory of plasmas.*

Magin, Thierry E.; Graille, Benjamin; Marc Massot, Course on Hypersonic Entry and Cruise Vehicles, Chazot, O.; Magin, T. E., Rhode-Saint-Genèse, Belgium, RTO-EN-AVT-162, 2008.

[BC5] *Ionization phenomena behind shock waves.*

Huo, Winifred; Panesi, Marco; Magin, Thierry E., High temperature phenomena in shock waves, Springer, Berlin, 2012.

[BC6] *The reusability limits of carbon/silicon carbide heat shield materials.*

Helber, Bernd; Panerai, Francesco; Chazot, Olivier; Magin, Thierry, Specialists Meeting on Catalytic Gas Surface Interactions, Rhode-Saint-Genèse, Belgium, RTO-EN-AVT-199, 2012.

[BC7] *Uncertainty Quantification for gas-surface interaction in Plasmatron.*

Villedieu, Nadège; Panerai Francesco; Chazot, Olivier; Magin, Thierry E., Specialists Meeting on Catalytic Gas Surface Interactions, Rhode-Saint-Genèse, Belgium, RTO-EN-AVT-199, 2012.

#### **Book editor (5)**

[B1] *Physico-chemical models for high-enthalpy and plasma flows.*

Fletcher, Douglas G.; Charbonnier, Jean-Marc; Sarma, Gabbita S. R.; Magin, Thierry, Rhode-Saint-Genèse, Belgium, VKI LS 2002-07, 2002.

[B2] *Course on hypersonic entry and cruise vehicles.*

Moin, Parviz; Magin, Thierry E.; Mansour, Nagi N.; Chazot, Olivier, Stanford, California, USA, VKI CW 2008-01, 2008.

[B3] *Non-equilibrium gas dynamics, from physical models to hypersonic flights.*

Chazot, O.; Magin, Thierry E., Rhode-Saint-Genèse, Belgium, RTO-EN-AVT-162, 2008.

[B4] *Models and computational methods for rarefied flows.*

Magin, Thierry. E.; Torrilhon, Manuel, Rhode-Saint-Genèse, Belgium, RTO-EN-AVT-194, 2011.

[B5] *Uncertainty quantification in computational fluid dynamics.*

Iaccarino, Gianluca; Magin, Thierry E., Rhode-Saint-Genèse, Belgium, RTO-EN-AVT-193, 2011.

#### **Journal articles (25)**

[J1] *Numerical simulation of nonequilibrium stagnation-line CO<sub>2</sub> flows with catalyzed surface reactions.*

Rini, Pietro; García, Antonio; Magin, Thierry; Degrez, Gérard, Journal of Thermophysics and Heat Transfer, 2004, 18(1), 114.

[J2] *A decade of aerothermal plasma research at the von Karman Institute.*

Bottin, Benoît; Carbonaro, Mario; Chazot, Olivier; Degrez, Gérard; Vanden Abeele, David; Barbante, Paolo; Paris, Sébastien; Van Der Haegen, Vincent; Magin, Thierry; Playez, Mickaël, Contributions to Plasma Physics, 2004, 44(5-6), 472.

[J3] *Transport properties of partially ionized and unmagnetized plasmas.*

Magin, Thierry E.; Degrez, Gérard, Physical Review E, 2004, 70, 046412.

[J4] *Transport algorithms for partially ionized and unmagnetized plasmas.*

Magin, Thierry E.; Degrez, Gérard, Journal of Computational Physics, 2004, 198, 424.

[J5] *Nonequilibrium radiative heat flux modeling for the Huygens entry probe.*

Magin, Thierry E.; Caillault, Lise; Bourdon, Anne; Laux, Christophe O., Journal of Geophysical Research Planets, 2006, 111, E07S12.

[J6] *Overview of the coordinated ground-based observations of Titan during the Huygens mission.*

Witasse, Olivier, *et al.* (including Magin, Thierry E.), Journal of Geophysical Research Planets, 2006, 111, E07S01.

[J7] *Radiative heating predictions for Huygens entry.*

Caillault, Lise; Walpot, Louis; Magin, Thierry E.; Bourdon, Anne; Laux, Christophe O., Journal of Geophysical Research Planets, 2006, 111, E09S90.

[J8] *Transport properties of collision-dominated dilute perfect gas mixtures at low pressures and high temperatures.*

Bottin, Benoît; Vanden Abeele, David; Magin, Thierry E.; Rini, Pietro, Progress in Aerospace Sciences, 2006, 42, 38.

[J9] *Analysis of the FIRE II flight experiment by means of a collisional radiative model.*

Panesi, Marco; Magin, Thierry E.; Bourdon, Anne; Bultel, Arnaud; Chazot, Olivier, Journal of Thermophysics and Heat Transfer, 2009, 23, 236.

[J10] *Kinetic theory of plasmas: translational energy.*

Graille, Benjamin; Magin, Thierry E.; Massot, Marc, Mathematical Models and Methods in Applied Sciences, 2009, 05(19), 527.

[J11] *Multicomponent transport in weakly ionized mixtures.*

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[J12] *Construction of low dissipative high-order well-balanced filter schemes for non-equilibrium flow.*

Wang, Wei; Yee, H.C.; Sjögren, Björn; Magin, Thierry; Shu, Chi-Wang, Journal of Computational Physics, 2011, 230, 4316.

[J13] *Electronic excitation of atoms and molecules for the FIRE II flight experiment.*

Panesi, Marco; Magin, Thierry E.; Bourdon, Anne; Bultel, Arnaud; Chazot, Olivier, Journal of Thermophysics and Heat Transfer, 2011, 25, 361.

[J14] *A high-order numerical method to study hypersonic boundary layer instability including high temperature effects.*

Marxen, Olaf; Magin, Thierry E.; Iaccarino, Gianluca; Shaqfeh, Erik, S. G., Physics of Fluids, 2011, 23, 084108.

[J15] *Coarse-graining model for internal energy excitation and dissociation of molecular nitrogen.*

Magin, Thierry E.; Panesi, Marco; Bourdon, Anne; Jaffe, Richard L.; Schwenke, David W., Chemical Physics, 2011, 398, 90.

[J16] *QCT-based vibrational collisional models applied to nonequilibrium nozzle flow.*

Munafó, Alessandro; Panesi, Marco; Jaffe, Richard L.; Colonna, Gianpiero; Bourdon, Anne, Magin, Thierry E., The European Physical Journal D, 2012, 66, 188.

[J17] *Rovibrational internal energy transfer and dissociation of  $N_2(^1\Sigma_g^+)$ - $N(^4S_u)$  system in hypersonic flows.*

Panesi, Marco; Magin, Thierry E.; Jaffe, Richard; Schwenke, David W., The Journal of Chemical Physics, 2013, 138, 044312.

[J18] *A method for the direct numerical simulation of hypersonic boundary-layer instability with finite-rate chemistry.*

Marxen, Olaf; Magin, Thierry E.; Shaqfeh, Eric S. G.; Iaccarino, Gianluca, Journal of Computational Physics, 2013, 255, 572.

[J19] *Reduction of state-to-state to macroscopic models for hypersonics.*

Bourdon, Anne; Annaloro, Julien; Bultel, Arnaud; Capitelli, Mario; Colonna, Gianpiero; Guy, Aurélien; Magin, Thierry E.; Munafó, Alessandro; Perrin, Marie-Yvonne; Pietanza, Lucia D., The Open Plasma Physics Journal, accepted for publication.

[J20] *Boltzmann rovibrational collisional coarse-grained model for internal energy excitation and dissociation in hypersonic flows*

Munafó, Alessandro; Panesi, Marco; Magin, Thierry E., Physical Review E, accepted for publication.

[J21] *DNS of hypersonic boundary-layer transition with finite-rate chemistry.*

Marxen, Olaf; Iaccarino, Gianluca; Magin, Thierry E., under review.

[J22] *A spectral-Lagrangian Boltzmann solver for a multi-energy level gas.*  
Munafó, Alessandro; Haack, Jeffrey R.; Gamba, Irene M.; Magin, Thierry E., under review.

[J23] *Bayesian-based method with meta-models for rebuilding freestream conditions in atmospheric entry flows.*

Tryoen, Julie; Congedo, Pietro; Abgrall, Remi; Villedieu, Nadège; Magin, accepted for publication.

[J24] *Comparison of Titan Entry Radiation Shock-Tube Data with Collisional-Radiative Models.*

Brandis, Aaron M.; Laux, Christophe O.; Magin, Thierry E.; McIntyre, Tim, J.; Morgan, Richard, G, Journal of Thermophysics and Heat Transfer, accepted for publication.

[J25] *Material response characterization of a low density carbon-composite ablator in high-enthalpy plasma flows.*

Helber, Bernd; Asma, Cem O.; Babou, Yacine; Hubin, Annick; Chazot, Olivier; Magin, Thierry E, under review.

#### **Manuscripts in preparation (4)**

[M1] *Modeling of reactive plasmas for atmospheric entry flows based on kinetic theory.*

Graille, Benjamin; Magin, Thierry E.; Massot, Marc, submitted, see preprint [M4].

[M2] *Thermo-chemical dynamics and chemical quasi-equilibrium of plasmas in thermal non-equilibrium.*

Graille, Benjamin; Magin, Thierry E.; Massot, Marc, submitted, see preprint [M8].

[M3] *Reactive boundary layers.*

Chazot, Olivier; Magin, Thierry E.; Barbante, Paolo, Fundamentals and Recent Advances in Nonequilibrium Hypersonic Flows, AIAA Progress Series Book on Nonequilibrium Hypersonic Flows.

[M4] *Uncertainty Quantification for gas-surface interaction in Plasmatron.*

Villedieu, Nadège; Panerai Francesco; Chazot, Olivier; Magin, Thierry E, under preparation.

## Conference papers (66)

[C1] *An implicit multiblock solver for inductive plasma flows.*

Magin, Thierry; Vanden Abeele, David; Degrez, Gérard, Fluids 2000, Denver Colorado, 2000, paper AIAA 2000-2480.

[C2] *Cooled Pitot probe in inductive air plasma jet: What do we measure?*

Magin, Thierry; Degrez, Gérard, 2<sup>nd</sup> International Symposium Atmospheric Reentry Vehicles and Systems, Arcachon, France, 2001.

[C3] *Application and analysis of a methodology for the determination of TPS catalytic properties.*

de la Llave Plata, Marta; Chazot, Olivier; Magin, Thierry; Degrez, Gérard; Kolesnikov, Anatolyi, 2<sup>nd</sup> International Symposium Atmospheric Reentry Vehicles and Systems, Arcachon, France, 2001.

[C4] *Determination of the catalytic properties in the VKI ICP facilities.*

Degrez, Gérard; Barbante, Paolo; de la Llave Plata, Marta; Magin, Thierry; Chazot, Olivier, European Congress on Computational Methods in Applied Sciences and Engineering, Swansea, Wales, 2001.

[C5] *Assessment of radiative transport in an argon plasma flow.*

Karl, Sebastian; Fletcher, Douglas G.; Degrez, Gérard; Magin, Thierry; Playez, Mickael, 4<sup>th</sup> European Symposium Aerothermodynamics for Space Applications, Capua, Italy, 2001, ESA SP 487, 505-512.

[C6] *Thermodynamic and transport properties of Martian atmosphere for space entry applications.*

Magin, Thierry; Degrez, Gérard; Sokolova, Irina, 33<sup>rd</sup> Plasmadynamics and Laser Conference, Maui, Hawaii, 2002, paper AIAA 2002-2226.

[C7] *Numerical simulations of carbon dioxide nonequilibrium flows with catalyzed surface reactions.*

Rini, Pietro; García, Antonio; Magin, Thierry; Degrez, Gérard, EUROMECH 440, Aerodynamics and Thermochemistry of High Speed Flows, Marseilles, France, 2002.

[C8] *Parallel implicit multiblock computations of inductive plasma flows.*

Magin, Thierry; Vanden Abeele, David; Degrez, Gérard; Baumgart, Johannes, in *Finite Volumes for Complex Applications III*, Hermes Penton Science, London, 2002, 801-808.

[C9] *Numerical simulation of nonequilibrium hypersonic CO<sub>2</sub> flows for Mars entry application.*

Rini, Pietro; Magin, Thierry; Degrez, Gérard; Fletcher, Douglas G., 3<sup>rd</sup> International Symposium Atmospheric Reentry Vehicles and Systems, Arcachon, France, 2003.

[C10] *Successful integration of CFD and experiments in fluid dynamics: the computational investigator point of view.*

Degrez, Gérard; Magin, Thierry; Dieudonné, Walter, *Integrating CFD and Experiments in Aerodynamics*, Glasgow, United Kingdom, 2003.

[C11] *Transport properties of partially ionized and unmagnetized carbon dioxide plasmas.*

Magin, Thierry E., 12<sup>th</sup> International on Methods of Aerophysical Research, Akademgorodok, Novosibirsk, Russia, 2004.

[C12] *Simulation of supersonic flows in inductively coupled plasma tunnels.*

Diebel, James; Magin, Thierry; Panesi, Marco; Rini, Pietro; Vanden Abeele, David; Degrez, Gérard, *Computational Fluid Dynamics 2004*, Springer, Berlin, 2006.

[C13] *Simulation of entry in the true Martian atmosphere.*

Baumgart, Johannes; Magin, Thierry; Rini, Pietro; Chazot, Olivier, 5<sup>th</sup> European Symposium on Aerothermodynamics for Space Vehicles, Cologne, Germany, 2005, ESA SP-563.

[C14] *Nonequilibrium radiation modeling for Huygens entry.*

Magin, Thierry E.; Caillault, Lise; Bourdon, Anne; Laux, Christophe O., 3<sup>rd</sup> International Planetary Probe Workshop, Anavyssos, Greece, 2005, ESA SP-598.

[C15] *A code calibration study for Huygens entry aeroheating.*

Wright, Michael J., Olejniczak, Joseph; Walpot, Louis; Raynaud, Elisabeth; Magin, Thierry; Caillault, Lise; Hollis, Brian, R., 44<sup>th</sup> AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, 2006, paper AIAA 2006-382.

[C16] *Simulation of nonequilibrium reentry air plasmas by means of a collisional-radiative model.*

Panesi, Marco; Magin, Thierry; Bourdon, Anne; Bultel, Arnaud; Chazot, Olivier, 38<sup>th</sup> AIAA Plasmadynamics and Laser Conference, Miami, Florida, 2007, paper AIAA 2007-4023.

[C17] *Numerical investigation of the non equilibrium shock-layer around the EXPERT vehicle.*

Panesi, Marco; Lani, Andrea; Magin, Thierry E.; Pinna, Fabio; Chazot, Olivier; Deconinck, Herman; 18<sup>th</sup> AIAA Computational Fluid Dynamics Conference, Miami, Florida, 2007, paper AIAA 2007-4327.

[C18] *Nonequilibrium radiation measurements and modeling relevant to Titan entry.*

Brandis, Aaron M.; Morgan, Richard G.; Laux, Christophe O.; Magin, Thierry.; McIntyre, Tim; Jacobs, Peter A., 16<sup>th</sup> Australasian Fluid Mechanics Conference (AFMC), Gold Coast, Queensland, Australia, 2007.

[C19] *Kinetic theory of plasmas.*

Magin, Thierry; Graille, Benjamin; Massot, Marc, 46<sup>th</sup> AIAA Aerospace Sciences Meeting and Exhibit, Reno, Nevada, 2008, paper AIAA 2008-1112.

[C20] *Analysis of the FIRE II flight experiment by means of a collisional radiative model.*

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[C21] *Simulation of nonequilibrium radiation using vibrationally specific nitrogen models.*

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[C22] *Internal energy excitation and dissociation of molecular nitrogen in a compressing flow.*

Magin, Thierry E.; Panesi, Marco; Bourdon, Anne; Jaffe, Richard; Schwenke, David, 41<sup>st</sup> AIAA Thermophysics Conference, San Antonio, Texas, 2009, AIAA-2009-3837.

[C23] *Uncertainty Quantification of radiative heat flux modeling for Titan atmospheric entry.*

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[C24] *Hypersonic boundary-layer instability with chemical reactions.*

Marxen, Olaf; Magin, Thierry; Iaccarino, Gianluca; Shaqfeh, Erik; 48<sup>th</sup> AIAA Aerospace Sciences Meeting, Orlando, Florida, AIAA-2010-707.



[C25] *Rovibrational internal energy excitation and dissociation of molecular nitrogen in hypersonic flows.*

Magin, Thierry E.; Panesi, Marco; Bourdon, Anne; Jaffe, Richard; Schwenke, David, 10<sup>th</sup> AIAA/ASME Joint Thermophysics and Heat Transfer Conference, Chicago, Illinois, 2010, AIAA-2010-4336.

[C26] *Vibrational state to state kinetics in expanding and compressing nitrogen flows.*

Munafó Alessandro; Panesi, Marco; Jaffe, Richard; Lani, Andrea; Magin, Thierry E., 10<sup>th</sup> AIAA/ASME Joint Thermophysics and Heat Transfer Conference, Chicago, Illinois, 2010, AIAA-2010-4335.

[C27] *Details of modeling Titan entry nonequilibrium radiation with a multiquantum vibration state CR model.*

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[C28] *A multi-group maximum entropy model for thermo-chemical non-equilibrium.*

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[C29] *Non-equilibrium ionization phenomena behind strong shock waves.*

Panesi, Marco; Magin, Thierry; Huo, Winifred, 27<sup>th</sup> International Symposium on Rarefied Gas Dynamics, Pacific Grove, California, 2010, paper 179.

[C30] *Thermo-chemical dynamics and chemical quasi-equilibrium of plasmas in thermal non-equilibrium.*

Massot, Marc; Magin, Thierry; Graille, Benjamin, 27<sup>th</sup> International Symposium on Rarefied Gas Dynamics, Pacific Grove, California, 2010, paper 305.

[C31] *Regularized Grad equations for multicomponent plasmas.*

Magin, Thierry; Martins, Gérald; Torrilhon, Manuel, 27<sup>th</sup> International Symposium on Rarefied Gas Dynamics, Pacific Grove, California, 2010, paper 306.

[C32] *Experimental investigation of the material response of carbon composite ablators in the VKI Plasmatron facility.*

Helber, Bernd; Asma, Cem O.; Babou, Yacine; Chazot, Olivier; Magin, Thierry E.; 17<sup>th</sup> AIAA Space Planes and Hypersonic Systems and Technologies Conference, San Francisco, USA, 2011, paper AIAA 2011-2302.

[C33] *Uncertainty quantification for gas-surface interaction in plasmatron facility.*

Villedieu, Nadège; Panerai, Francesco; Chazot, Olivier; Magin, Thierry E.; 7<sup>th</sup> European Symposium on Aerothermodynamics, Brugge, Belgium, 2011.

[C34] *Investigation of the gas-surface interaction of innovative carbon composite ablators in the VKI plasmatron.*

Helber, Bernd; Babou, Yacine; Panerai, Francesco; Chazot, Olivier; Hubin, Annick; Magin, Thierry E.; 7<sup>th</sup> European Symposium on Aerothermodynamics, Brugge, Belgium, 2011.

[C35] *Detailed theoretical study of collisional rotation-vibration energy transfer and dissociation in  $N_2$ .*

Jaffe, Richard L.; Schwenke, David W.; Panesi, Marco; Magin, Thierry E.; 7<sup>th</sup> European Symposium on Aerothermodynamics, Brugge, Belgium, 2011.

[C36] *Application of vibrational state to state collisional models for atmospheric entry flow.*

Munafó, Alessandro; Panesi, Marco; Jaffe, Richard; Colonna, Gianpiero; Magin, Thierry E.; 7<sup>th</sup> European Symposium on Aerothermodynamics, Brugge, Belgium, 2011.

[C37] *Influence of internal energy excitation and molecular dissociation on normal shock structure.*

Torres, Erik; Munafó Alessandro; Magin, Thierry E.; 7<sup>th</sup> European Symposium on Aerothermodynamics, Brugge, Belgium, 2011.

[C38] *Recent advancements in the numerical simulation of non-equilibrium flows with application to monatomic gases.*

Kapper, Michael G; Cambier, Jean-Luc; Bultel, Arnaud; Magin, Thierry E.; 7<sup>th</sup> European Symposium on Aerothermodynamics, Brugge, Belgium, 2011.

[C39] *On numerical methods for hypersonic turbulent flows.*

Yee, Helen C.; Sjögren, Bjorn; Chu, Chi Wang; Wang, Wei; Magin, Thierry E.; Hadjadj, Abdellha; 7<sup>th</sup> European Symposium on Aerothermodynamics, Brugge, Belgium, 2011.

[C40] *A short review of ablative-material response models and simulation tools.*

Lachaud, Jean; Magin, Thierry E.; Cozmuta, Ioana; Mansour, Nagi N.; 7<sup>th</sup> European Symposium on Aerothermodynamics, Brugge, Belgium, 2011.

[C41] *Feasibility analysis and preliminary design of an atmospheric re-entry Cubesat demonstrator.*

Baillet, Gilles; Asma, Cem O.; Muylaert, Jean; Magin, Thierry E.; 7<sup>th</sup> European Symposium on Aerothermodynamics, Brugge, Belgium, 2011.

[C42] *Uncertainty quantification for characterization of high enthalpy facilities.*

Villedieu, Nadège; Cappaert, Jeroen; Garcia Galache, Jose Pedro; Magin, Thierry E.; Eucass 2011, 4<sup>th</sup> European Conference for Aerospace Sciences, Saint-Petersburg, Russia, 2011.

[C43] *Hypersonics simulations based on the Regularized Grad equations for multicomponent plasmas.*

Martins, Gérald; Kapper, Michael; Torrilhon, Manuel; Magin, Thierry E.; 6<sup>th</sup> AIAA Theoretical Fluid Mechanics Conference, Honolulu, Hawaii, USA, 2011, paper AIAA-2011-3305.

[C44] *Kinetic theory derivation of transport equations for gases with internal energy.* Magin, Thierry E.; Graille, Benjamin; Massot Marc, 42<sup>nd</sup> AIAA Thermophysics Conference, Honolulu, Hawaii, USA, 2011, paper AIAA-2011-4034.

[C45] *Mechanism reduction for rovibrational energy excitation and dissociation of molecular nitrogen in hypersonic flows.*

Munafó, Alessandro; Panesi, Marco; Jaffe, Richard L.; Bourdon, Anne; Magin, Thierry E., 42<sup>nd</sup> AIAA Thermophysics Conference, Honolulu, Hawaii, USA, 2011, paper AIAA-2011-3623.

[C46] *Stagnation line approximation for ablation thermochemistry.*

de Mûelenaere, Julien; Lachaud, Jean; Mansour, Nagi, N.; Magin, Thierry E., 42<sup>nd</sup> AIAA Thermophysics Conference, Honolulu, Hawaii, USA, 2011, paper AIAA-2011-3616.

[C47] *High-fidelity charring ablator thermal response model.*

Mansour, Nagi, N.; Lachaud, Jean; Magin, Thierry E.; de Mûelenaere, Julien; Chen, Yih-Kanq, 42<sup>nd</sup> AIAA Thermophysics Conference, Honolulu, Hawaii, USA, 2011, paper AIAA-2011-3124.

[C48] *In-orbit technology demonstration missions for debris mitigation.*

Muylaert, Jean; Asma, Cem O.; Magin, Thierry E.; Eucass 2011, 4th European Conference for Aerospace Sciences, Saint-Petersburg, Russia, 2011.

[C49] *Numerical schemes for nonequilibrium multicomponent plasmas based on the*

*regularized Grad equations.*

Kapper, Michael G.; Martins, Gérald; Torrilhon, Manuel; Magin, Thierry E.; Eucass 2011, 4th European Conference for Aerospace Sciences, Saint-Petersburg, Russia, 2011.

**[C50]** *Evaluation of the aerodynamic properties of the Intermediate eXperimental Vehicle in the rarefied and transitional regime.*

Banyai, Tamas; Torres, Erik; Magin, Thierry E.; Kashkovsky, Alexander V.; Vashchenkov, Pavel V.; Ivanov, Mickail. S., and Rambaud, Patrick; Eucass 2011, 4th European Conference for Aerospace Sciences, Saint-Petersburg, Russia, 2011.

**[C51]** *Investigation of nonequilibrium effects in axisymmetric nozzle and blunt body nitrogen flows by means of a reduced rovibrational collisional model.*

Munafó, Alessandro; Kapper, Michael; Cambier, Jean-Luc; Magin, Thierry E., 50th Aerospace Sciences Meeting, Nashville, Tennessee, USA, 2012, paper AIAA-2012-647.

**[C52]** *Review of the VKI research on nonequilibrium phenomena in hypersonic.*

Magin, Thierry E.; Chazot, Olivier, 50th Aerospace Sciences Meeting, Nashville, Tennessee, USA, 2012, paper AIAA-2012-725.

**[C53]** *Multiphysics models and simulations for reacting and plasma flows applied to the space exploration program.*

Magin, Thierry E., 9<sup>th</sup> National Congress on Theoretical and Applied Mechanics, Brussels, Belgium, 2012.

**[C54]** *Ablation of carbon preform in the VKI Plasmatron.*

Helber, Bernd; Chazot, Olivier; Hubin, Annick; Magin, Thierry E., 43<sup>rd</sup> AIAA Thermophysics Conference, New Orleans, Louisiana, USA, 2012, paper AIAA-2012-2876.

**[C55]** *Transition prediction for oblique breakdown in supersonic boundary layers with uncertain disturbance spectrum.*

Serino, Gennaro; Marxen, Olaf; Pinna, Fabio; Rambaud, Patrick; Magin, Thierry E., 42<sup>nd</sup> AIAA Fluid Dynamics Conference, New Orleans, Louisiana, USA, 2012, paper AIAA-2012-2973.

**[C56]** *Statistical simulation of internal energy exchange in shock waves using explicit transition probabilities.*

Torres, Erik; Magin, Thierry E., 28<sup>th</sup> International Symposium on Rarefied Gas Dynamics, Zaragoza, Spain, 2012.

[C57] *Investigation of nonequilibrium internal energy excitation in shock waves by means of a Spectral-Lagrangian Boltzmann solver.*

Munafò, Alessandro; Haack, Jeff; Gamba, Irene M.; and Magin, Thierry E., 28<sup>th</sup> International Symposium on Rarefied Gas Dynamics, Zaragoza, Spain, 2012.

[C58] *Hydrodynamic model for molecular gases in thermal non-equilibrium.*

Magin, Thierry; Graille, Benjamin; Massot, Marc, 28<sup>th</sup> International Symposium on Rarefied Gas Dynamics, Zaragoza, Spain, 2012.

[C59] *State-to-state model for DSMC simulation of internal energy exchange in hypersonic flows.*

Torres, Erik; Magin, Thierry, 51<sup>st</sup> AIAA Aerospace Sciences Meeting including the New Horizons Forum and Aerospace Exposition, Grapevine, Texas, USA, 2013, paper AIAA 2013-195.

[C60] *Investigation of nonequilibrium effects across normal shock waves by means of a spectral-Lagrangian Boltzmann solver.*

Munafò, Alessandro; Torres, Erik; Haack, Jeff; Gamba, Irene M.; Magin, Thierry, 51<sup>st</sup> AIAA Aerospace Sciences Meeting including the New Horizons Forum and Aerospace Exposition, Grapevine, Texas, USA, 2013, paper AIAA 2013-305.

[C61] *Sensitivity analysis and characterization of the uncertain input data for the EXPERT vehicle.*

Tryoen, Julie; Congedo, Pietro; Abgrall, Remi; Villedieu, Nadège; Magin, Thierry, 51<sup>st</sup> AIAA Aerospace Sciences Meeting including the New Horizons Forum and Aerospace Exposition, Grapevine, Texas, USA, 2013, paper AIAA 2013-956.

[C62] *Qubesat for aerothermodynamic research and measurement on ablation.*

Baillet, Gilles; Sakraker, Isil; Scholz, Thorsten; Asma, Cem O.; Magin, Thierry; Muylaert, J., 4<sup>th</sup> International ARA Days, Arcachon, France, 2013.

[C63] *Space and time-resolved emission spectroscopy of carbon phenolic ablation in air and nitrogen plasmas.*

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