

MILAN KUCHAŘÍK

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Basic Information:

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Education:

- Mar. 2002–May 2006** PhD study in Physics at the Department of Physical Electronics, Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague. Thesis title: “Arbitrary Lagrangian-Eulerian (ALE) Methods in Plasma Physics”.
- Sep. 1996–Feb. 2002** Master study in Computational Physics at the Department of Physical Electronics, Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague. Thesis title: “Difference Schemes for Conservation Laws in 3D”.
- Jan. 2000–May 2000** One semester study at the Department of Mathematics and Statistics of the University of New Mexico, Albuquerque (NM), USA.

Employment History:

- Since Jul. 2006** Postdoc in Mathematical Modeling and Analysis Group (T-7) of the Los Alamos National Laboratory, Los Alamos (NM), USA.
- May 2005–Jul. 2005** Graduate Research Assistant in the Los Alamos National Laboratory, Los Alamos (NM), USA.
- Jan. 2005–Jul. 2006** Technical staff member of the Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering.
- May 2003–Aug. 2003** Graduate Research Assistant in the Los Alamos National Laboratory, Los Alamos (NM), USA.
- May 2002–Aug. 2002** Graduate Research Assistant in the Los Alamos National Laboratory, Los Alamos (NM), USA.

Other Activities:

- Summer semester 2004** Teaching the course “Numerical Methods” at Czech Technical University.
- 2002–2006** Teaching the course “Practical Informatics” at Czech Technical University.
- 2001–2006** Administration of the UNIX network at the department.

Professional Interests:

- Interests in Computational Physics, Applied Mathematics, Conservation Laws, solving PDEs in multiple dimensions.
- Development and analysis of 3D difference schemes and their applications in gas dynamics and plasma physics.
- Development of Arbitrary Lagrangian-Eulerian (ALE) methods for gas dynamics and plasma physics.
- Conservative interpolations of functions, applications in the context of ALE methods.
- Multimaterial Lagrangian models and remapping algorithms for multimaterial ALE code.
- Mesh smoothing techniques for ALE methods.
- Simulations of interactions of intense laser beam with massive or flyer targets, high speed impact simulations.

Selected Recent Publications:

- [1] R. Garimella, M. Kuchařík, and M. Shashkov. An efficient linearity and bound preserving conservative interpolation (remapping) on polyhedral meshes. *Computers & Fluids*, 36(2):224–237, 2007.
- [2] M. Kuchařík, R. Liska, S. Steinberg, and B. Wendroff. Optimally-stable second-order accurate difference schemes for nonlinear conservation laws in 3D. *Applied Numerical Mathematics*, 56(5):589–607, 2006.
- [3] M. Kuchařík, J. Limpouch, and R. Liska. Cylindrical 2D ALE simulations of laser interactions with flyer targets. *Czechoslovak Journal of Physics*, 56:B522–B527, 2006.
- [4] T. Kapin, M. Kuchařík, J. Limpouch, and R. Liska. Hydrodynamic simulations of laser interactions with low-density foams. *Czechoslovak Journal of Physics*, 56:B493–B499, 2006.
- [5] M. Kuchařík, J. Limpouch, and R. Liska. Laser plasma simulations by arbitrary Lagrangian Eulerian method. *J. de Physique IV*, 133:167–169, 2006.

Principal Investigator of Grant Projects:

Ministry of Education of the Czech Republic project Nr. FRVS 2087/2004, “Arbitrary Lagrangian-Eulerian Methods for Plasma Hydrodynamic” (2004).

Czech Technical University internal grant Nr. CTU0410914, “Development of Arbitrary Lagrangian-Eulerian (ALE) Methods in Plasma Physics” (2004).

Czech Technical University internal grant Nr. CTU0310614, “Arbitrary Lagrangian-Eulerian (ALE) Methods in Plasma Physics” (2003).

Participation on Grant Projects:

Ministry of Education of the Czech Republic project Nr. LC528, “Center of Laser Plasma”, principal investigator Dr. Karel Jungwirth (2005-2006).

Ministry of Education of the Czech Republic project Nr. MSM 6840770010, “Applied Mathematics in Technical and Physical Sciences”, principal investigator Prof. Karel Kozel (2005-2006).

Ministry of Education of the Czech Republic project Nr. MSM 6840770022, “Laser Systems, Radiation, and Modern Optical Applications” (2005-2006).

Ministry of Education of the Czech Republic project Nr. FRVS 1987G1/2005, “Advanced Arbitrary Lagrangian-Eulerian Methods for Plasma Hydrodynamic Simulations”, principal investigator Pavel Váchal (2005).

Czech Grant Agency grant Nr. 202/03/H162, “Advanced Topics in Physics and Chemistry of Plasma”, principal investigator Dr. Jan Stöckel (2003-2006).

Ministry of Education of the Czech Republic project Nr. LN00A100, “Research Center of Laser Plasma”, principal investigator Dr. Karel Jungwirth (2000-2004).

Czech Grant Agency grant Nr. 201/00/0586, “Difference Schemes for Conservation Laws and Laser-Generated Plasma Simulations”, principal investigator Dr. Richard Liska (2000-2003).

Publications

Journal articles:

1. **M. Kuchařík, M. Shashkov:** *Extension of Efficient, Swept-Integration Based Conservative Remapping Method for Meshes with Changing Connectivity*, International Journal for Numerical Methods in Fluids, In press, 2007.
2. **T. Kapin, M. Kuchařík, J. Limpouch, R. Liska, P. Váchal:** *Arbitrary Lagrangian Eulerian method for laser plasma simulations*, International Journal for Numerical Methods in Fluids, In press, 2007.
3. **R. Garimella, M. Kuchařík, M. Shashkov:** *An Efficient Linearity and Bound Preserving Conservative Interpolation (Remapping) on Polyhedral Meshes*, Computers & Fluids, Vol. 36, Nr. 2, pp. 224–237, 2007.
4. **M. Kuchařík, J. Limpouch, R. Liska:** *Laser Plasma Simulations by Arbitrary Lagrangian Eulerian Method*, Journal de Physique IV, Vol. 133, pp. 167-169, 2006.
5. **M. Kuchařík, J. Limpouch, R. Liska:** *Cylindrical 2D ALE simulations of laser interactions with flyer targets*, Czechoslovak Journal of Physics, Vol. 56, Suppl. B, pp. 522-527, 2006.
6. **T. Kapin, M. Kuchařík, J. Limpouch, R. Liska:** *Hydrodynamic simulations of laser interactions with low-density foams*, Czechoslovak Journal of Physics, Vol. 56, Suppl. B, pp. 493-499, 2006.
7. **M. Kuchařík, R. Liska, S. Steinberg, B. Wendroff:** *Optimally-Stable Second-Order Accurate Difference Schemes for Nonlinear Conservation Laws in 3D*, Applied Numerical Mathematics, Vol. 56, Nr. 5, pp. 589-607, 2006.
8. **M. Kuchařík, R. Liska, J. Limpouch, P. Váchal:** *ALE Simulations of High-Velocity Impact Problem*, Czechoslovak Journal of Physics, Vol. 54, Suppl. C, pp. 391-396, 2004.
9. **M. Kuchařík, M. Shashkov, B. Wendroff:** *An efficient linearity-and-bound-preserving remapping method*, Journal of Computational Physics, Vol. 188, Nr. 2, pp. 462-471, 2003.
10. **L. Drška, M. Kuchařík, J. Limpouch, R. Liska, M. Šiňor, A. Iskakov:** *Hydrodynamical modeling of targets compression to high densities*, Czechoslovak Journal of Physics, Vol. 52, Suppl. D, pp. 362-367, 2002.

Articles in Conference Proceedings:

1. **M. Kuchařík, R. Liska, P. Váchal, M. Shashkov:** *Arbitrary Lagrangian-Eulerian (ALE) Methods in Compressible Fluid Dynamics*, Programs and Algorithms of Numerical Mathematics 13, pp. 178–183, Mathematical Institute, Czech Academy of Sciences, editors J. Chleboun, K. Segeth, T. Vejchodský, 2006.
2. **R. Liska, M. Kuchařík, R. Loubere, M. Shashkov:** *Arbitrary Lagrangian-Eulerian (ALE) Method in Cylindrical Coordinates for Laser Plasma Simulations*, Proceedings of HYP 2006, Eleventh International Conference on Hyperbolic Problems Theory, Numerics, Applications, Ecole Normale Supérieure de Lyon, 2006. Submitted.
3. **J. Limpouch, P. Adámek, N. G. Borisenco, N. N. Demchenko, T. Kapin, A. M. Khalenkov, D. Klír, V. Kmetík, E. Krouský, M. Kuchařík, R. Liska, K. Mašek, W. Nazarov, M. Pfeifer, M. Šiňor, J. Ullschmied:** *Impact of Foam Structure and Composition on Laser Absorption and Energy Transfer*, ECA, 33rd European Physical Society Conference on Plasma Physics, Vol. 30, Part I, pp. P-5.001, editors F. De Marco, G. Vlad, 2006.
4. **P. Váchal, R. Liska, M. Kuchařík:** *Advanced Lagrangian-Eulerian Methods for Simulations of Plasma Hydrodynamics*, Proceedings of Workshop 2006, Czech Technical University in Prague, CTU Reports, Vol. 10, Part A, pp. 58-59, ISBN 80-01-03439-9, 2006.
5. **R. Liska, M. Kuchařík:** *Arbitrary Lagrangian Eulerian method for compressible plasma simulations*, Proceedings of EQUADIFF 11, International conference on differential equations, Comenius University, pp. 49, editor D. Sevcovic, 2006. ISBN 80-227-2261-8.
6. **M. Kuchařík, R. Liska, M. Shashkov:** *Conservative Remapping and ALE Methods for Plasma Physics*, Proceedings of HYP 2004, Tenth International Conference on Hyperbolic Problems: Theory, Numerics, Applications, Vol. 2, editors F. Asakura, S. Kawashima, A Matsumura, S. Nishibata, K. Nishihara. Yokohama publishers, 2006. ISBN 4-946552-22-7.
7. **M. Kuchařík:** *Conservative Interpolations in ALE Codes*, Proceedings of Workshop of Applied Mathematics 2005, Czech Technical University in Prague, 2005. Accepted.

8. **M. Kuchařík, R. Liska, P. Bureš:** *Development of Arbitrary Lagrangian-Eulerian (ALE) Methods in Plasma Physics*, Proceedings of Workshop 2005, Czech Technical University in Prague, CTU Reports, Part A, Vol. 9, pp. 120-121, 2005. ISBN 80-01-03201-9.
9. **M. Kuchařík, J. Limpouch, R. Liska, P. Havlík:** *ALE Simulations of Laser Interactions with Flyer Targets*, Proceedings of XXVIII ECLIM, 28th European Conference on Laser Interaction with Matter, pp. 470-474, 2004.
10. **M. Kuchařík, R. Liska:** *Arbitrary Lagrangian-Eulerian (ALE) Code for Plasma Simulations*, Proceedings of Czech-Japanese Seminar in Applied Mathematics, Czech Technical University in Prague, editors M. Beneš, J. Mikiška, and T. Oberhuber, pp. 96-105, 2005. ISBN 80-01-03181-0.
11. **R. Garimella, M. Kuchařík, M. Shashkov:** *Efficient Algorithm for Local-Bound-Preserving Remapping in ALE Methods*, Numerical Mathematics and Advanced Applications, editors M. Feistauer, V. Dolejší, P. Knobloch, and K. Najzar. Springer-Verlag Berlin Heidelberg New York, pp. 358-367, 2004. ISBN: 3-540-21460-7.
12. **M. Kuchařík, R. Liska, J. Limpouch, P. Váchal:** *Arbitrary Lagrangian-Eulerian (ALE) Methods in Plasma Physics*, Proceedings of Workshop 2004, Czech Technical University in Prague, CTU Reports, Vol. 8, Part A, pp. 82-83, 2004. ISBN 80-01-02945-X.
13. **M. Kuchařík, M. Shashkov, B. Wendroff:** *Efficient Local Bound-Preserving Conservative Interpolation*, Proceedings of Seventh U.S. National Congress on Computational Mechanics, Omnipress, pp. 166, 2003. ISBN: 0-9743254-0-6.
14. **R. Liska, L. Drška, Z. Jeriová, M. Kuchařík, J. Limpouch, M. Šiňor, P. Váchal:** *Difference Schemes for Conservation Laws and Hydrodynamics Modelling in Plasma Physics*, Proceedings of Workshop 2003, Part A, Vol. 7, pp. 176-177, CTU Reports, Czech Technical University in Prague, 2003. ISBN 80-01-02708-2.
15. **R. Liska, L. Drška, A. Iskakov, M. Kuchařík, J. Limpouch, M. Šiňor:** *Hydrodynamics Modeling of Targets for High Density Plasma Generation*, Proceedings of Workshop 2002, Part A, Vol. 6, pp. 168-169, CTU Reports, Czech Technical University in Prague, Prague, 2002. ISBN 80-01-02511-X.

Abstracts in Conference Books of Abstracts:

1. **M. Kucharik, R. Liska, M. Shashkov:** *Multimaterial Arbitrary Lagrangian-Eulerian Method for Compressible Fluid Dynamics*, Abstracts of 9USACM, pp. 092/145, 2007.
2. **M. Kucharik, M. Shashkov:** *An Efficient, Linearity-and-Bound-Preserving Conservative Interpolation (Remapping) Method for Meshes with Changing Connectivity*, Abstracts of SIAM Conference on Computational Science and Engineering, pp. 73, 2007.
3. **M. Kuchařík, R. Liska, P. Váchal, M. Shashkov:** *Arbitrary Lagrangian-Eulerian (ALE) Methods in Compressible Fluid Dynamics*, Book of Abstracts of Programs and Algorithms of Numerical Mathematics 13, Mathematical Institute, Czech Academy of Sciences, 2006.
4. **R. Liska, M. Kuchařík, R. Loubere, M. Shashkov:** *Arbitrary Lagrangian-Eulerian (ALE) Method in Cylindrical Coordinates for Laser Plasma Simulations*, Book of abstracts of HYP 2006, Eleventh International Conference on Hyperbolic Problems Theory, Numerics, Applications, Ecole Normale Supérieure de Lyon, pp. 93-95, 2006.
5. **J. Limpouch, P. Adámek, N. G. Borisenco, N. N. Demchenko, T. Kapin, A. M. Khalenkov, D. Klír, V. Kmetík, E. Krouský, M. Kuchařík, R. Liska, K. Mašek, W. Nazarov, M. Pfeifer, M. Šiňor, J. Ullschmied:** *Impact of Foam Structure and Composition on Laser Absorption and Energy Transfer*, Abstracts of 33rd EPS Conference on Plasma Physics, pp. P-5.001, 2006.
6. **M. Kuchařík, J. Limpouch, R. Liska:** *Cylindrical 2D ALE simulations of laser interactions with flyer targets*, Programme & Abstract Book of the 22nd Symposium on Plasma Physics and Technology editors J. Koller, and J. Píchal, pp. 153, 2006. ISBN 80-01-03506-9.
7. **T. Kapin and M. Kuchařík and J. Limpouch and R. Liska:** *Hydrodynamic simulations of laser interactions with low-density foams*, Programme & Abstract Book of the 22nd Symposium on Plasma Physics and Technology editors J. Koller, and J. Píchal, pp. 144, 2006. ISBN 80-01-03506-9.
8. **R. Liska, M. Kuchařík:** *Arbitrary Lagrangian Eulerian method for compressible plasma simulations*, Book of Abstracts of EQUADIFF 11, International conference on differential equations, Comenius University, pp. 49, 2005.

9. **M. Kuchařík, J. Limpouch, R. Liska:** *Laser Plasma Simulations by Arbitrary Lagrangian Eulerian Method*, Book of Abstracts of IFSA 2005, Fourth International Conference on Inertial Fusion Sciences and Applications, CEA, Biarritz, France, 2005.
10. **M. Kuchařík, R. Liska:** *Coupling ALE Hydrodynamics with Heat Conductivity and Laser Absorption for Laser Plasma Simulations*, Abstracts of Invited Presentations of Workshop on Numerical Methods for Multi-material Flows, University of Oxford, pp. 16, 2005.
11. **R. Garimella, M. Kuchařík, M. Shashkov:** *Efficient 3D Remapping Algorithm for General Grids*, Abstracts of Invited Presentations of Workshop on Numerical Methods for Multi-material Flows, University of Oxford, pp. 11, 2005.
12. **M. Kuchařík, R. Liska, R. Garimella, R. Loubère, M. Shashkov:** *Development of Hydrodynamical ALE Methods for Complex Laser Plasma Flows*, Abstracts of HYKE Conference on Complex Flows, Universitat Autònoma de Barcelona, pp. 19, 2004.
13. **M. Kuchařík, R. Liska, M. Shashkov:** *Conservative Remapping and ALE Methods for Plasma Physics*, Abstracts of HYP 2004, Tenth International Conference on Hyperbolic Problems: Theory, Numerics, Applications, Osaka University, pp. 124, 2004.
14. **M. Kuchařík, J. Limpouch, R. Liska:** *ALE Simulations of Laser Interactions with Flyer Targets*, ECLIM Book of Abstracts, 28th European Conference on Laser Interaction with Matter, pp. 184, 2004.
15. **M. Kuchařík, J. Limpouch, R. Liska, P. Váchal, R. Garimella, R. Loubère, M. Shashkov:** *Arbitrary Lagrangian-Eulerian (ALE) Methods in Plasma Physics*, Book of Abstracts of CCP 2004, Conference on Computational Physics, European Physical Society, editor G. Ciccotti, ECA Series, Vol. 28D, pp. 248-249, 2004. ISBN 2-914771-19-3.
16. **M. Kuchařík, R. Liska:** *Arbitrary Lagrangian-Eulerian (ALE) Code for Plasma Simulations*, Abstracts of CJS 2004, Czech-Japanese Seminar in Applied Mathematics, Czech Technical University in Prague, pp. 6, 2004.
17. **M. Kuchařík, R. Liska, P. Váchal:** *Conservative Interpolations in Arbitrary Lagrangian-Eulerian (ALE) Codes*, Abstracts of Talks of ICCAM 2004, Eleventh International Congress on Computational and Applied Mathematics, Katholieke Universiteit Leuven, pp. 67, 2004.
18. **M. Kuchařík, R. Liska, J. Limpouch, P. Váchal:** *ALE Simulations of High-Velocity Impact Problem*, Book of Abstracts of SPPT 2004, The 21st Symposium on Plasma Physics and Technology, editors J. Koller, and J. Píchal, pp. 72, 2004. ISBN 80-01-03015-6.
19. **M. Kuchařík, M. Shashkov, B. Wendroff:** *Efficient Algorithm for Local-Bound-Preserving Remapping in ALE Methods*, Book of Abstracts of ENUMATH 2003, Fifth European Conference on Numerical Mathematics and Advanced Application, Charles University Prague, pp. 76, 2003.
20. **M. Kuchařík, M. Shashkov, B. Wendroff:** *Second-order, local-bound-preserving, remapping for ALE methods*, Compilation of Abstracts for the Second M.I.T. Conference on Computational Fluid and Solid Mechanics, editor K. J. Bathe, Massachusetts Institute of Technology, Cambridge, MA, pp. 119, 2003.

Technical Reports:

1. **M. Kuchařík, M. Shashkov:** *Reference-Jacobian Smoother with Unstructured Features*, technical report LA-UR-07-1800, Los Alamos National Laboratory, 2007.
2. **M. Kuchařík, M. Shashkov:** *Efficient Linearity and Bound Preserving Remapping for Meshes with Changing Connectivity*, technical report LA-UR-05-6193, Los Alamos National Laboratory, 2005.
3. **R. Garimella, M. Kuchařík, M. Shashkov:** *An Efficient Linearity and Bound Preserving Conservative Interpolation (Remapping) on Polyhedral Meshes*, technical report, Los Alamos National Laboratory, 2005.
4. **R. Garimella, M. Kuchařík, M. Shashkov, B. Wendroff:** *3D Remapping on Unstructured Meshes for ALE Simulations*, technical report LA-UR-04-2371, Los Alamos National Laboratory, 2004. Appeared in T-7 Research Highlights, Mathematical Modeling and Analysis, Spring 2004, pp. 67.
5. **R. Garimella, M. Kuchařík, M. Shashkov:** *Efficient Algorithm for Local-Bound-Preserving Remapping in ALE Methods*, technical report LA-UR-03-7609, Los Alamos National Laboratory, 2003.

6. **M. Kuchařík**: *2D Conservative Interpolation for ALE Methods*, technical report LA-UR-02-7501, Los Alamos National Laboratory. Appeared in T-7 Book, Mathematical Modeling and Analysis, Spring 2003, pp. 93.
7. **M. Kuchařík, M. Shashkov, B. Wendroff**: *Efficient Second-Order Bound-Preserving Remapping (Conservative Interpolation)*, technical report LA-UR-02-6395, Los Alamos National Laboratory, 2002.
8. **M. Kuchařík, M. Shashkov, B. Wendroff**: *Remapping for ALE Methods*, technical report LA-UR-02-5840, Los Alamos National Laboratory, 2002.
9. **L. Drška, A. Iskakov, M. Kuchařík, J. Limpouch, R. Liska, M. Šiňor**: *Hydrodynamics Modeling of Targets for High Density Plasma Generation*, technical report, Czech Technical University in Prague, 2001.

Conference Talks:

1. **M. Kucharik, R. Liska, M. Shashkov**: *Multimaterial Arbitrary Lagrangian-Eulerian Method for Compressible Fluid Dynamics*, talk at 9th US National Congress on Computational Mechanics, San Francisco, U.S.A., July 23-26, 2007.
2. **M. Kucharik, R. Liska, M. Shashkov**: *Advanced Arbitrary Lagrangian-Eulerian Method in Laser-Plasma Interaction Simulations*, talk at 14th International Conference on Finite Elements in Flow Problems, Santa Fe, U.S.A., March 26-28, 2007.
3. **M. Kucharik, M. Shashkov**: *An Efficient, Linearity-and-Bound-Preserving Conservative Interpolation (Remapping) Method for Meshes with Changing Connectivity*, talk at SIAM Conference on Computational Science and Engineering, Costa Mesa, U.S.A., February 19-23, 2007.
4. **R. Garimella, M. Kuchařík, M. Shashkov**: *Efficient 3D Remapping Algorithm for General Grids*, talk at Workshop on Numerical Methods for Multi-material Flows, Oxford, UK, September 5-8, 2005.
5. **M. Kuchařík**: *Conservative Interpolations in ALE Codes*, talk at Workshop of Applied Mathematics, Czech Technical University in Prague, Czech Republic, April 26-27, 2005.
6. **M. Kuchařík, R. Liska, M. Shashkov**: *Conservative Remapping and ALE Methods for Plasma Physics*, talk at HYP 2004, Tenth International Conference on Hyperbolic Problems: Theory, Numerics, Applications, Osaka University, Osaka, Japan, September 13-17, 2004.
7. **M. Kuchařík, R. Liska**: *Arbitrary Lagrangian-Eulerian (ALE) Code for Plasma Simulations*, talk at CJS 2004, Czech-Japanese Seminar in Applied Mathematics, Czech Technical University in Prague, Czech Republic, August 4-7, 2004.
8. **M. Kuchařík, R. Liska, P. Váchal**: *Conservative Interpolations in Arbitrary Lagrangian-Eulerian (ALE) Codes*, talk at ICCAM 2004, Eleventh International Congress on Computational and Applied Mathematics, Katholieke Universiteit Leuven, Belgium, July 26-30, 2004.
9. **M. Kuchařík, Rao Garimella, M. Shashkov, B. Wendroff**: *Efficient Algorithm for Local-Bound-Preserving Remapping in ALE Methods*, talk at ENUMATH 2003, The European Conference on Numerical Mathematics and Advanced Applications, Prague, Czech Republic, August 18-22, 2003.
10. **M. Kuchařík, M. Shashkov, B. Wendroff**: *An Efficient Linearity-and-Bound-Preserving Remapping Method*, talk at Second M.I.T. Conference on Computational Fluid and Solid Mechanics, Massachusetts Institute of Technology, Cambridge, Massachusetts, USA, June 17-20, 2003.

Conference Posters:

1. **J. Limpouch, P. Adámek, N. G. Borisenko, N. N. Demchenko, T. Kapin, A. M. Khalenkov, D. Klír, V. Kmetík, E. Krouský, M. Kuchařík, R. Liska, K. Mašek, W. Nazarov, M. Pfeifer, M. Šiňor, J. Ullschmid**: *Impact of Foam Structure and Composition on Laser Absorption and Energy Transfer*, Poster at 33rd EPS Conference on Plasma Physics, Rome, June 19-23, 2006.
2. **P. Adámek, T. Kapin, M. Kuchařík, R. Liska, J. Limpouch, M. Šiňor**: *Hydrodynamic simulations of laser interactions with foam targets*, poster at 29th ECLIM, European Conference on Laser Interaction with Matter, Madrid, Spain, June 11-16, 2006.
3. **M. Kuchařík, J. Limpouch, R. Liska**: *Cylindrical 2D ALE simulations of laser interactions with flyer targets*, poster at 22nd Symposium on Plasma Physics and Technology, Prague, Czech Republic, June 26-29, 2006.

4. **T. Kapin, M. Kuchařík, J. Limpouch, R. Liska:** *Hydrodynamic simulations of laser interactions with low-density foams*, poster at 22nd Symposium on Plasma Physics and Technology, Prague, Czech Republic, June 26-29, 2006.
5. **M. Kuchařík, J. Limpouch, R. Liska:** *Laser Plasma Simulations by Arbitrary Lagrangian Eulerian Method*, poster at Fourth International Conference on Inertial Fusion Sciences and Applications, Biarritz, France, September 4-9, 2005.
6. **M. Kuchařík, R. Liska, P. Bureš:** *Development of Arbitrary Lagrangian-Eulerian (ALE) Methods in Plasma Physics*, poster at Workshop of the Czech Technical University in Prague, Czech Technical University in Prague, Czech Republic, March 21-25, 2005.
7. **M. Kuchařík, R. Liska, R. Garimella, R. Loubère, M. Shashkov:** *Development of Hydrodynamical ALE Methods for Complex Laser Plasma Flows*, poster at HYKE Conference on Complex Flows, Universitat Autonoma de Barcelona, Spain, October 6-9, 2004.
8. **M. Kuchařík, J. Limpouch, R. Liska, P. Havlík:** *ALE Simulations of Laser Interactions with Flyer Targets*, poster at XXVIII ECLIM, 28th European Conference on Laser Interaction with Matter, Roma, Italy, September 6-10, 2004.
9. **M. Kuchařík, J. Limpouch, R. Liska, P. Váchal, R. Garimella, R. Loubère, M. Shashkov:** *Arbitrary Lagrangian-Eulerian (ALE) Methods in Plasma Physics*, poster at CCP 2004, Conference on Computational Physics, European Physical Society, Genova, Italy, September 1-4, 2004.
10. **M. Kuchařík, R. Liska, J. Limpouch, P. Váchal:** *ALE Simulations of High-Velocity Impact Problem*, SPPT 2004, poster at the 21st Symposium on Plasma Physics and Technology, Prague, Czech Republic, June 14-17, 2004.
11. **M. Kuchařík, R. Liska, J. Limpouch, P. Váchal:** *Arbitrary Lagrangian-Eulerian (ALE) Methods in Plasma Physics*, poster at Workshop of the Czech Technical University in Prague, Czech Technical University in Prague, Czech Republic, March 22-26, 2004.
12. **L. Drška, M. Kuchařík, J. Limpouch, R. Liska, M. Šiňor, A. Iskakov:** *Hydrodynamical modeling of targets compression to high densities*, poster at 20th Symposium of Plasma Physics and Technology, Czech Technical University in Prague, June 10-13, 2002.

Other Publications and Presentations:

1. **M. Kuchařík:** *Arbitrary Lagrangian-Eulerian (ALE) Methods in Plasma Physics*, Ph.D. Thesis, Czech Technical University in Prague, 2006.
2. **M. Kuchařík, M. Shashkov:** *Efficient Linearity and Bound Preserving Remapping for meshes with Changing Connectivity*, Numerical Analysis Seminar, T-7 group, Los Alamos National Laboratory, July 8, 2005.
3. **M. Kuchařík, R. Garimella, M. Shashkov, B. Wendroff:** *3D Remapping on Unstructured Meshes for ALE Simulations*, Numerical Analysis Seminar, T-7 group, Los Alamos National Laboratory, July 23, 2003.
4. **M. Kuchařík, M. Shashkov, B. Wendroff:** *2D Conservative Interpolation for ALE Methods*, Numerical Analysis Seminar, T-7 group, Los Alamos National Laboratory, June 19, 2002.
5. **M. Kuchařík:** *Difference Schemes for Conservation Laws in 3D*, Masters Thesis, Czech Technical University in Prague, 2002.