Stanford

Simone D'Amico

Associate Professor of Aeronautics and Astronautics

CONTACT INFORMATION

- **Administrator**

  Dana Parga - Administrative Associate

  Email dparga@stanford.edu

  Tel (650) 723-3775

Bio

BIO

Simone D'Amico is Associate Professor of Aeronautics and Astronautics (AA), W.M. Keck Faculty Scholar in the School of Engineering, Associate Professor of Geophysics (by Courtesy), Science Fellow at the Hoover Institution and Chief Science Officer at EraDrive Inc. He is the Founding Director of the Stanford Space Rendezvous Laboratory, Founding Co-Director of the Center for AEroSpace Autonomy Research (CAESAR), and Director of the Undergraduate Program in Aerospace Engineering at Stanford. He has 23+ years of experience in research and development of autonomous spacecraft and distributed space systems. He developed and deployed the distributed Guidance, Navigation, and Control (GNC) system of several formation-flying, rendezvous and proximity operations missions such as GRACE (NASA/DLR), PRISMA (OHB/DLR/CNES/DTU), TanDEM-X (DLR), BIROS (DLR) and PROBA-3 (ESA). Currently, he is the institutional PI of four autonomous satellite swarms funded by NASA (STARLING, STARI) and by NSF (VISORS, SWARM-EX). Dr. D'Amico is Fellow of AAS, Associate Fellow of AIAA, Associate Editor of the AIAA's JGCD and he is in the Advisory Board of four space start-ups focusing on distributed space systems for future applications in SAR remote sensing, orbital lifetime prolongation, and space-based solar power. He was the recipient of several awards, most recently the 2024 NASA Ames Honor Award for the Starling mission, Best Paper Awards at IAF (2022), IEEE (2021), AIAA (2021), AAS (2019) conferences, the M. Barry Carlton Award by IEEE (2020), the Leonardo 500 Award by the Leonardo da Vinci Society/ISSNAF (2019), FAI/NAA's Group Diploma of Honor (2018), DLR's Sabbatical/Forschungssemester (2012) and Wissenschaft Preis (2006), and NASA's Group Achievement Award for the GRACE mission (2004). He received the B.S. and M.S. degrees from Politecnico di Milano (2003) and the Ph.D. degree from Delft University of Technology (2010).

ACADEMIC APPOINTMENTS

- Associate Professor, Aeronautics and Astronautics

HONORS AND AWARDS

- NASA Group Achievement Award for the Gravity Recovery and Climate Experiment (GRACE), National Aeronautics and Space Administration (04/01/2004)
- DLR's Wissenschaft Preis 2006 (Science Award), German Aerospace Center (11/01/2006)
- Excellent Reviewer for the AIAA Journal of Guidance, Control, and Dynamics, American Institute of Aeronautics and Astronautics (10/01/2007 - 09/01/2008)
- First Class Award of the IAF 5th International Workshop on Constellations and Formation Flying, International Astronautical Federation (07/01/2008)

- Associate Member of the System Engineering Honor Society, Omega Alpha Association (12/01/2010)
- DLR's Besondere Auszeichnung 2010 for the TanDEM-X Project Team, German Aerospace Center (03/01/2011)
- Excellent Reviewer for the AIAA Journal of Guidance, Control, and Dynamics, American Institute of Aeronautics and Astronautics (10/01/2011 - 09/01/2012)
- DLR's Award for PRISMA Science Team, German Aerospace Center (12/01/2011)
- DLR's Forschungssemester (Sabbatical), German Aerospace Center (09/01/2012 - 12/01/2012)
- Excellent Reviewer for the AIAA Journal of Guidance, Control, and Dynamics, American Institute of Aeronautics and Astronautics (10/01/2012 - 09/01/2013)
- Terman Faculty Fellowship, Stanford School of Engineering (12/01/2013 - 11/30/2016)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- International Program Committee Member, International Workshop on Satellite Constellations and Formation Flying (IWSCFF) (2013 - present)
- Chairman and Organizer, 5th International Conference on Spacecraft Formation Flying Missions and Technologies (SFFMT) (2011 - 2013)
- Program Committee Member, International Conference on Spacecraft Formation Flying Missions and Technologies (SFFMT) (2008 - present)
- Co-Chair, International Conference on Spacecraft Formation Flying Missions and Technologies (SFFMT) (2008 - present)

PROFESSIONAL EDUCATION

- PhD, Technical University of Delft (The Netherlands) , Aerospace Engineering (2010)
- BS and MS, Politecnico di Milano (Italy) , Aerospace Engineering (2003)

LINKS

- Stanford's Space Rendezvous Laboratory: https://people.stanford.edu/damicos/
- Stanford's Aero/Astro Department: http://aa.stanford.edu/
- 5th SFFMT Conference: http://www.sffmt2013.org/

Teaching

COURSES

2024-25

- Control of Distributed Space Systems: AA 279D (Spr)
- Space Flight: AA 131 (Aut)
- Space Mechanics: AA 279A (Win)

2023-24

- Space Flight: AA 131 (Aut)
- Space Mechanics: AA 279A (Win)
- Spacecraft Attitude Determination and Control: AA 279C (Spr)

2022-23

- Dynamics, Navigation, and Control of Distributed Space Systems: AA 279D (Spr)
- Space Flight: AA 131 (Aut)
- Space Mechanics: AA 279A (Win)

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Antonio Rizza

Doctoral Dissertation Advisor (AC)

Zahra Ahmed, Emily Bates, Toby Bell, Ethan Foss, Pol Francesch Huc, Matthew Hunter, Samuel Low, Shane Lowe, Walter Manuel, Mason Murray-Cooper, Yuji Takubo

Master's Program Advisor

Rahul Ayanampudi, Tycho Bogdanowitsch, Michael Buchar, Anna Masset, Colin Skinner, Adrian Zhuang

Doctoral (Program)

Thomas MacLean

Publications

PUBLICATIONS

- **Real-time orbit and atmospheric drag estimation for spacecraft swarms** *ACTA ASTRONAUTICA*
  Lowe, S., D'Amico, S.
  2026; 245: 1012-1034
- **Autonomous Navigation of a Satellite Swarm Using Inter-Satellite Bearing Angles** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Kruger, J., D'Amico, S.
  2026
- **Safe and Optimal N-Spacecraft Swarm Reconfiguration in Non-Keplerian Cislunar Orbits** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Takubo, Y., Manuel, W., Foss, E., D'Amico, S.
  2025
- **Bridging the Domain Gap for Flight-Ready Spaceborne Vision** *JOURNAL OF SPACECRAFT AND ROCKETS*
  Park, T., D'amico, S.
  2025
- **Ultraviolet starshade capabilities for exo-Earth imaging** *JOURNAL OF ASTRONOMICAL TELESCOPES INSTRUMENTS AND SYSTEMS*
  Ahmed, Z., Shaklan, S., Currie, M. H., D'amico, S.
  2025; 11 (4)
- **Goal-Oriented Trajectory Refinement for Asteroid Mapping Using Sequential Convex Programming** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Rizza, A., D'Amico, S., Topputo, F.
  2025
- **Introduction to the Virtual Collection on Distributed Space Systems** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Mesbahi, M., D'Amico, S.
  2025
- **Generalizable Spacecraft Trajectory Generation via Multimodal Learning with Transformers**
  Celestini, D., Afsharrad, A., Gammelli, D., Guffanti, T., Zardini, G., Lall, S., Capello, E., D'Amico, S., Pavone, M., IEEE
  IEEE.2025: 3558-3565
- **Fast Fuel-Optimal Constrained Impulsive Control with Application to Distributed Spacecraft**
  Hunter, M., D'Amico, S., IEEE
  IEEE.2025
- **Event-Driven Simulation for Rapid Iterative Development of Distributed Space Flight Software**
  Bell, T., D'Amico, S., IEEE
  IEEE.2025

- **On-Orbit Performance and Lessons Learned for Autonomous Angles-Only Navigation of a Satellite Swarm**
  Kruger, J., D'Amico, S., IEEE
  IEEE.2025

- **Towards Robust Spacecraft Trajectory Optimization via Transformers**
  Takubo, Y., Guffanti, T., Gammelli, D., Pavone, M., D'Amico, S., IEEE
  IEEE.2025

- **Space-LLaVA: a Vision-Language Model Adapted to Extraterrestrial Applications**
  Foutter, M., Gammelli, D., Kruger, J., Foss, E., Bhoj, P., Guffanti, T., D'Amico, S., Pavone, M., IEEE
  IEEE.2025

- **Controls for Space: a perspective to 2030s and beyond II**
  Mammarella, M., D'Amico, S., Pavone, M., Linares, R., Acheson, M. J., Ankersen, F., Sasaki, T., Ancona, E., DiMatteo, J., Spiegel, I. A., Azza, F., Varile, M., IEEE
  IEEE.2025: 3047-3056

- **Controls for Space: a perspective to 2030s and beyond I**
  Mammarella, M., D'Amico, S., Pavone, M., Linares, R., Acheson, M. J., Ankersen, F., Sasaki, T., Ancona, E., DiMatteo, J., Spiegel, I. A., Azza, F., Varile, M., IEEE
  IEEE.2025: 2286-2296

- **Transformer-Based Model Predictive Control: Trajectory Optimization via Sequence Modeling** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Celestini, D., Gammelli, D., Guffanti, T., D'Amico, S., Capello, E., Pavone, M.
  2024; 9 (11): 9820-9827

- **Observability analysis and optimization for angles-only navigation of distributed space systems** *ADVANCES IN SPACE RESEARCH*
  Kruger, J., D'Amico, S.
  2024; 73 (11): 5464-5483

- **Robust multi-task learning and online refinement for spacecraft pose estimation across domain gap** *ADVANCES IN SPACE RESEARCH*
  Park, T., D'Amico, S.
  2024; 73 (11): 5726-5740

- **Fast angles-only relative navigation using polynomial dynamics** *ADVANCES IN SPACE RESEARCH*
  Willis, M., D'Amico, S.
  2024; 73 (11): 5484-5500

- **Concept of Operations for SWARM-EX: a Three CubeSat Formation-Flying Mission**
  Lowe, S., Fitzpatrick, D., Buynovskiy, A., Shoemaker, L., Palo, S., D'Amico, S., IEEE
  IEEE.2024

- **Adaptive End-to-End Architecture for Autonomous Spacecraft Navigation and Control During Rendezvous and Proximity Operations**
  Kruger, J., Guffanti, T., Park, T., Murray-Cooper, M., Low, S., Bell, T., D'Amico, S., Roscoe, C., Westphal, J., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2024

- **STARI: STarlight Acquisition and Reflection toward Interferometry**
  Monnier, J. D., Jain, P., Kalluri, S., Cutler, J., DAmico, S., Lightsey, G., Pogorelyuk, L., Vasisht, G., Cahoy, K., Meyer, M.
  edited by Matsuura, S., Perrin, M. D., Coyle, L. E.
  SPIE-INT SOC OPTICAL ENGINEERING.2024

- **Rapid Abstraction of Spacecraft 3D Structure from Single 2D Image**
  Park, T., D'Amico, S., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2024

- **Goal -oriented Asteroid Mapping under Uncertainties using Sequential Convex Programming**
  Rizza, A., Topputo, F., D'Amico, S., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2024

- **Online Supervised Training of Spaceborne Vision during Proximity Operations using Adaptive Kalman Filtering**
  Ha Park, T., D'Amico, S., IEEE
  IEEE.2024: 11744-11752

- **RELATIVE NAVIGATION AND POINTING ERROR BUDGET FOR AN X-RAY ASTRONOMY FORMATION-FLYING MISSION**
  Lowe, S., Markevitch, M., D'Amico, S.
  edited by Sandnas, M., Spencer, D. B.
  SPRINGER INTERNATIONAL PUBLISHING AG.2024: 1433-1445

- **CONCEPT OF OPERATIONS FOR THE VISORS MISSION: A TWO SATELLITE CUBESAT FORMATION FLYING TELESCOPE**
  Lightsey, E., Arunkumar, E., Kimmel, E., Kolhof, M., Paletta, A., Rawson, W., Selvamurugan, S., Sample, J., Guffanti, T., Bell, T., Koenig, A., D'Amico, S., Park, et al
  edited by Sandnas, M., Spencer, D. B.
  SPRINGER INTERNATIONAL PUBLISHING AG.2024: 1209-1233

- **Precise Distributed Satellite Navigation: Differential GPS with Sensor-Coupling for Integer Ambiguity Resolution**
  Low, S. Y. W., D'Amico, S., IEEE
  IEEE.2024

- **Robust Closed-form Framework for Drag-Propulsive Control of Formation Flight**
  Hunter, M., D'Amico, S., IEEE
  IEEE.2024

- **Closed-Form Modeling and Control of Spacecraft Swarms in Eccentric Orbits**
  Delurgio, N., D'Amico, S., IEEE
  IEEE.2024

- **Transformers for Trajectory Optimization with Application to Spacecraft Rendezvous**
  Guffanti, T., Gammelli, D., D'Amico, S., Pavone, M., IEEE
  IEEE.2024

- **Autonomous Asteroid Characterization Through Nanosatellite Swarming** *IEEE TRANSACTIONS ON AEROSPACE AND ELECTRONIC SYSTEMS*
  Dennison, K., Stacey, N., D'Amico, S.
  2023; 59 (4): 4604-4624

- **Adaptive Neural-Network-Based Unscented Kalman Filter for Robust Pose Tracking of Noncooperative Spacecraft** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Park, T., D'Amico, S.
  2023

- **Starling Formation-Flying Optical Experiment (StarFOX): System Design and Preflight Verification** *JOURNAL OF SPACECRAFT AND ROCKETS*
  Kruger, J., Koenig, A. W., D'Amico, S.
  2023

- **Leveraging neural network uncertainty in adaptive unscented Kalman Filter for spacecraft pose estimation** *ADVANCES IN SPACE RESEARCH*
  Cassinis, L., Ha Park, T., Stacey, N., D'Amico, S., Menicucci, A., Gill, E., Ahrns, I., Sanchez-Gestido, M.
  2023; 71 (12): 5061-5082

- **Formation Flying Orbit and Control Concept for Virtual Super Optics Reconfigurable Swarm Mission** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Koenig, A. W., D'Amico, S., Lightsey, E.
  2023

- **Passively Safe and Robust Multi-Agent Optimal Control with Application to Distributed Space Systems** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Guffanti, T., D'Amico, S.
  2023

- **Satellite Pose Estimation Competition 2021: Results and Analyses** *ACTA ASTRONAUTICA*
  Park, H., Martens, M., Jawaid, M., Wang, Z., Chen, B., Chin, T., Izzo, D., D'Amico, S.
  2023; 204: 640-665
- **Analytical process noise covariance modeling for absolute and relative orbits** *ACTA ASTRONAUTICA*
  Stacey, N., D'Amico, S.
  2022; 194: 34-47
- **Astrostationary orbits for hybrid space and ground-based observatories** *JOURNAL OF ASTRONOMICAL TELESCOPES INSTRUMENTS AND SYSTEMS*
  Peretz, E., Hamilton, C., Mather, J. C., D'Amico, S., Michaels, A., Pritchett, R., Yu, W., Wizinowich, P.
  2022; 8 (1)
- **Robust Passively Safe Spacecraft Swarming via Closed-form and Optimization-based Control Approaches**
  Guffanti, T., D'Amico, S., IEEE
  IEEE.2022: 416-423
- **Autonomous angles-only multitarget tracking for spacecraft swarms** *ACTA ASTRONAUTICA*
  Kruger, J., D'Amico, S.
  2021; 189: 514-529
- **Safe, Delta-v-Efficient Spacecraft Swarm Reconfiguration Using Lyapunov Stability and Artificial Potentials** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Lippe, C., D'Amico, S.
  2021
- **Adaptive and Dynamically Constrained Process Noise Estimation for Orbit Determination.** *IEEE transactions on aerospace and electronic systems*
  Stacey, N., D'Amico, S.
  2021; 57 (5): 2920-2937
- **Fast Algorithm for Fuel-Optimal Impulsive Control of Linear Systems With Time-Varying Cost** *IEEE TRANSACTIONS ON AUTOMATIC CONTROL*
  Koenig, A. W., D'Amico, S.
  2021; 66 (9): 4029-4042
- **Optimal spacecraft swarm reconfiguration through chief orbit refinement** *ACTA ASTRONAUTICA*
  Lippe, C., D'Amico, S.
  2021; 183: 162-175
- **Spacecraft swarm dynamics and control about asteroids** *ADVANCES IN SPACE RESEARCH*
  Lippe, C., D'Amico, S.
  2021; 67 (11): 3426-3443
- **Generalized Angles-Only Navigation Architecture for Autonomous Distributed Space Systems** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Sullivan, J., Koenig, A. W., Kruger, J., D'Amico, S.
  2021; 44 (6): 1087-1105
- **Exoplanet imaging scheduling optimization for an orbiting starshade working with Extremely Large Telescopes** *JOURNAL OF ASTRONOMICAL TELESCOPES INSTRUMENTS AND SYSTEMS*
  Peretz, E., Mather, J. C., Hall, K., Pabarcius, L., Canzoniero, C. M., Gilchrist, K., Lieber-Kotz, M., Slonaker, R., Yu, W. H., Hughes, S., Hur-Diaz, S., Koenig, A., D'Amico, et al
  2021; 7 (2)
- **Starshade Rendezvous: exoplanet orbit constraints from multi-epoch direct imaging** *JOURNAL OF ASTRONOMICAL TELESCOPES INSTRUMENTS AND SYSTEMS*
  Romero-Wolf, A., Bryden, G., Agnes, G., Arenberg, J. W., Bradford, S., D'Amico, S., Debes, J., Greenhouse, M., Hu, R., Matousek, S., Rhodes, J., Ziemer, J.
  2021; 7 (2)

- **Starshade Rendezvous: exoplanet orbit constraints from multi-epoch direct imaging** *JOURNAL OF ASTRONOMICAL TELESCOPES INSTRUMENTS AND SYSTEMS*
  Romero-Wolf, A., Bryden, G., Agnes, G., Arenberg, J. W., Bradford, S., D'Amico, S., Debes, J., Greenhouse, M., Hu, R., Matousek, S., Rhodes, J., Ziemer, J.
  2021; 7 (2)
- **Closed-Form Optimal Impulsive Control of Spacecraft Formations Using Reachable Set Theory**
  Chernick, M., D'Amico, S.
  AMER INST AERONAUTICS ASTRONAUTICS.2021: 25–44
- **Using a Virtual Chief to Minimize Delta-v for Satellite Swarm Maintenance in Eccentric Orbits**
  Lippe, C., D'Amico, S., IEEE
  IEEE.2021
- **ARTMS: Enabling Autonomous Distributed Angles-Only Orbit Estimation for Spacecraft Swarms**
  Koenig, A. W., Kruger, J., Sullivan, J., D'Amico, S., IEEE
  IEEE.2021: 4282-4289
- **Optimal Spacecraft Orbit Design for Inertial Alignment with Ground Telescopes**
  Koenig, A. W., D'Amico, S., Peretz, E., Yu, W., Hur-Diaz, S., Mather, J., IEEE
  IEEE.2021
- **Autonomous Angles-Only Navigation for Spacecraft Swarms around Planetary Bodies**
  Kruger, J., Wallace, K., Koenig, A. W., D'Amico, S., IEEE
  IEEE.2021
- **Precise Real-Time Relative Orbit Determination for Large-Baseline Formations Using GNSS**
  Giralo, V., D'Amico, S., Inst Navigat
  INST NAVIGATION.2021: 366-384
- **Neural Network-Based Pose Estimation for Noncooperative Spacecraft Rendezvous** *IEEE TRANSACTIONS ON AEROSPACE AND ELECTRONIC SYSTEMS*
  Sharma, S., D'Amico, S.
  2020; 56 (6): 4638–58
- **Satellite Pose Estimation Challenge: Dataset, Competition Design, and Results** *IEEE TRANSACTIONS ON AEROSPACE AND ELECTRONIC SYSTEMS*
  Kisantal, M., Sharma, S., Park, T., Izzo, D., Martens, M., Damico, S.
  2020; 56 (5): 4083–98
- **Distributed multi-GNSS timing and localization for nanosatellites** *NAVIGATION-JOURNAL OF THE INSTITUTE OF NAVIGATION*
  Giralo, V., D'Amico, S.
  2019; 66 (4): 729–46
- **Formation Design of Distributed Telescopes in Earth Orbit for Astrophysics Applications** *JOURNAL OF SPACECRAFT AND ROCKETS*
  Koenig, A. W., Macintosh, B., D'Amico, S.
  2019; 56 (5): 1462–77
- **Linear Models for Spacecraft Relative Motion Perturbed by Solar Radiation Pressure** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Guffanti, T., D'Amico, S.
  2019; 42 (9): 1962–81
- **Variable-Magnification Optical Stimulator for Training and Validation of Spaceborne Vision-Based Navigation** *JOURNAL OF SPACECRAFT AND ROCKETS*
  Beierle, C., D'Amico, S.
  2019; 56 (4): 1060–72
- **POSE ESTIMATION FOR NON-COOPERATIVE SPACECRAFT RENDEZVOUS USING NEURAL NETWORKS**
  Sharma, S., D'Amico, S.
  edited by Topputo, F., Sinclair, A. J., Wilkins, M. P., Zanetti, R.

UNIVELT INC.2019: 3527–46

- **Polar Orbiting Infrared Tracking Receiver (POINTR)**
  Taylor, M., Roychowdhury, A., Maldonado, S., Zeng, O., Tuck, S., Adamkiewicz, M., Roy, S., Hillard, J., Radhakrishnan, M., D'Amico, S., IEEE
  IEEE.2019
- **AUTONOMOUS SWARMING FOR SIMULTANEOUS NAVIGATION AND ASTEROID CHARACTERIZATION**
  Stacey, N., D'Amico, S.
  edited by Singla, P., Weisman, R. M., Marchand, B. G., Jones, B. A.
  UNIVELT INC.2019: 3723–52
- **CLOSED-FORM OPTIMAL IMPULSIVE CONTROL OF SPACECRAFT FORMATIONS USING REACHABLE SET THEORY**
  Chernick, M., D'Amico, S.
  edited by Singla, P., Weisman, R. M., Marchand, B. G., Jones, B. A.
  UNIVELT INC.2019: 3199–3223
- **ANGLES-ONLY NAVIGATION FOR AUTONOMOUS ON-ORBIT SPACE SITUATIONAL AWARENESS APPLICATIONS**
  Sullivan, J., Lovell, T., D'Amico, S.
  edited by Singla, P., Weisman, R. M., Marchand, B. G., Jones, B. A.
  UNIVELT INC.2019: 2455–80
- **SECOND-ORDER ANALYTICAL SOLUTION FOR RELATIVE MOTION ON ARBITRARILY ECCENTRIC ORBITS**
  Willis, M., Lovell, A., D'Amico, S.
  edited by Topputo, F., Sinclair, A. J., Wilkins, M. P., Zanetti, R.
  UNIVELT INC.2019: 3547–69
- **Analytical approach to spacecraft formation-flying with low-thrust relative spiral trajectories**
  Willis, M., D'Amico, S.
  PERGAMON-ELSEVIER SCIENCE LTD.2018: 175–90
- **Safe spacecraft swarm deployment and acquisition in perturbed near-circular orbits subject to operational constraints**
  Koenig, A. W., D'Amico, S.
  PERGAMON-ELSEVIER SCIENCE LTD.2018: 297–310
- **Robust and Safe N-Spacecraft Swarming in Perturbed Near-Circular Orbits** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Koenig, A. W., D'Amico, S.
  2018; 41 (8): 1643–62
- **New Closed-Form Solutions for Optimal Impulsive Control of Spacecraft Relative Motion**
  Chernick, M., D'Amico, S.
  AMER INST AERONAUTICS ASTRONAUTICS.2018: 301–19
- **Development of the Stanford GNSS Navigation Testbed for Distributed Space Systems**
  Giralo, V., D'Amico, S., Inst Navigat
  INST NAVIGATION.2018: 837–56
- **Two-Stage Attitude Control for Direct Imaging of Exoplanets with a CubeSat Telescope**
  Beierle, C., Norton, A., Macintosh, B., D'Amico, S.
  edited by Lystrup, M., MacEwen, H. A., Fazio, G. G.
  SPIE-INT SOC OPTICAL ENGINEERING.2018
- **Integration Constants as State Variables for Optimal Path Planning**
  Guffanti, T., D'Amico, S., IEEE
  IEEE.2018: 3197–3202
- **Pose Estimation for Non-Cooperative Spacecraft Rendezvous Using Convolutional Neural Networks**
  Sharma, S., Beierle, C., D'Amico, S., IEEE
  IEEE.2018

- **Nonlinear Kalman Filtering for Improved Angles-Only Navigation Using Relative Orbital Elements** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Sullivan, J., D'Amico, S.
  2017; 40 (9): 2183–2200

- **CONSTRAINED LOW-THRUST SATELLITE FORMATION-FLYING USING RELATIVE ORBIT ELEMENTS**
  Steindorf, L. M., D'Amico, S., Scharnagl, J., Kempf, F., Schilling, K.
  edited by McMahon, J. W., Guo, Y., Leve, F. A., Sims, J. A.
  UNIVELT INC.2017: 3563–83

- **ADAPTIVE FILTERING FOR MANEUVER-FREE ANGLES-ONLY NAVIGATION IN ECCENTRIC ORBITS**
  Sullivan, J., D'Amico, S.
  edited by McMahon, J. W., Guo, Y., Leve, F. A., Sims, J. A.
  UNIVELT INC.2017: 1015–38

- **LONG-TERM ANALYTICAL PROPAGATION OF SATELLITE RELATIVE MOTION IN PERTURBED ORBITS**
  Guffanti, T., D'Amico, S., Lavagna, M.
  edited by McMahon, J. W., Guo, Y., Leve, F. A., Sims, J. A.
  UNIVELT INC.2017: 2387–2417

- **Comparative assessment of techniques for initial pose estimation using monocular vision** *ACTA ASTRONAUTICA*
  Sharma, S., D'Amico, S.
  2016; 123: 435-445

- **Safe Picosatellite Release from a Small Satellite Carrier** *JOURNAL OF SPACECRAFT AND ROCKETS*
  Wermuth, M., Gaias, G., D'Amico, S.
  2015; 52 (5): 1338-1347

- **Impulsive Maneuvers for Formation Reconfiguration Using Relative Orbital Elements** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Gaias, G., D'Amico, S.
  2015; 38 (6): 1036-1049

- **Angles-Only Navigation to a Noncooperative Satellite Using Relative Orbital Elements** *AIAA/AAS Astrodynamics Specialist Conference*
  Gaias, G., D'Amico, S., Ardaens, J.
  AMER INST AERONAUTICS ASTRONAUTICS.2014: 439–51

- **Noncooperative Rendezvous Using Angles-Only Optical Navigation: System Design and Flight Results** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  D'Amico, S., Ardaens, J., Gaias, G., BENNINGHOFF, H., Schlepp, B., JORGENSEN, J. L.
  2013; 36 (6): 1576-1595

- **GPS-based relative navigation for the Proba-3 formation flying mission** *ACTA ASTRONAUTICA*
  Ardaens, J., D'Amico, S., Cropp, A.
  2013; 91: 341-355

- **Flight Results of Precise Autonomous Orbit Keeping Experiment on PRISMA Mission** *22nd AAS/AIAA Space Flight Mechanics Meeting*
  De Florio, S., D'Amico, S., Radice, G.
  AMER INST AERONAUTICS ASTRONAUTICS.2013: 662–74

- **Autonomous formation flying based on GPS - PRISMA flight results** *6th International Workshop on Satellite Constellation and Formation Flying (IWSCFF)*
  D'Amico, S., Ardaens, J., De Florio, S.
  PERGAMON-ELSEVIER SCIENCE LTD.2013: 69–79

- **Noncooperative Rendezvous using Angles-only Optical Navigation: System Design and Flight Results** *Journal of Guidance, Control, and Dynamics*
  D'Amico, S., Ardaens, J., Gaias, G., Benninghoff, H., Schlepp, B., Joergensen, J. L.
  2013; 36 (6): 1576-1595

- **FFRF and GPS sensor fusion for relative navigation of formation flying satellites** *5th International Conference on Spacecraft Formation Flying Missions and Technologies*
  Allende, G., D'Amico, S., Montenbruck, O., Hugentobler, U., Delpech, M.
  2013
- **Generalized Multi-Impulsive Maneuvers for Optimum Spacecraft Rendezvous** *5th International Conference on Spacecraft Formation Flying Missions and Technologies*
  Gaias, G., D'Amico, S., Ardaens, J.
  2013
- **Pose Estimation of an Uncooperative Spacecraft from Actual Space Imagery** *5th International Conference on Spacecraft Formation Flying Missions and Technologies*
  D'Amico, S., Benn, M., Joergensen, J. L.
  2013
- **Combined Autonomous Absolute and Relative Orbit Control in Low Earth Orbit** *5th International Conference on Spacecraft Formation Flying Missions and Technologies*
  De Florio, S., D'Amico, S., Radice, G.
  2013
- **PRISMA** *Distributed Space Missions for Earth System Monitoring*
  D'Amico, S., Bodin, P., Delpech, M., Noteborn, R.
  Springer Space Technology Library.2013: 599–637
- **GPS Based Relative Navigation** *Distributed Space Missions for Earth System Monitoring*
  Montenbruck, O., D'Amico, S.
  Springer Space Technology Library.2013: 185–223
- **Spaceborne Autonomous Formation-Flying Experiment on the PRISMA Mission** *AIAA Guidance, Navigation, and Control Conference*
  D'Amico, S., Ardaens, J., Larsson, R.
  AMER INST AERONAUTICS ASTRONAUTICS.2012: 834–50
- **Navigation and Control of the PRISMA Formation: In-Orbit Experience** *Journal of Mechanics Engineering and Automation*
  D'Amico, S., Larsson, R.
  2012; 2 (5): 312-320
- **Final Commissioning of the PRISMA GPS Navigation System** *Journal of Aerospace Engineering, Sciences and Applications*
  Ardaens, J., D'Amico, S., Montenbruck, O.
  2012; 4 (3): 104-118
- **Flight Demonstration of Non-Cooperative Rendezvous using Optical Navigation** *23rd International Symposium on Space Flight Dynamics*
  D'Amico, S., Ardaens, J., Gaias, G., Schlepp, B., Benninghoff, H., Tzschichholz, T., Karlsson, T., Joergensen, J. L.
  2012
- **Precise Autonomous Orbit Control in Low Earth Orbit** *AIAA/AAS Astrodynamics Specialist Conference*
  De Florio, S., D'Amico, S., Radice, G.
  2012
- **THE PRISMA FORMATION FLYING DEMONSTRATOR: OVERVIEW AND CONCLUSIONS FROM THE NOMINAL MISSION** *35th Annual AAS Rocky Mountain Section Guidance and Control Conference*
  Bodin, P., Noteborn, R., Larsson, R., Karlsson, T., D'Amico, S., Ardaens, J. S., Delpech, M., Berges, J.
  UNIVELT INC.2012: 441–460
- **Angles-only Navigation to a Non-Cooperative Satellite using Relative Orbital Elements** *AIAA/AAS Astrodynamics Specialist Conference*
  Gaias, G., D'Amico, S., Ardaens, J.
  2012
- **Final Commissioning of the PRISMA GPS Navigation System** *Journal of Aerospace Engineering, Sciences and Applications*
  Ardaens, J., D'Amico, S., Montenbruck, O.
  2012; 4 (3): 104-118

- **Flight Demonstration of Non-Cooperative Rendezvous using Optical Navigation** *23rd International Symposium on Space Flight Dynamics*
  D'Amico, S., Ardaens, J., Gaias, G., Schlepp, B., Benninghoff, H., Tzschichholz, T., Karlsson, T., Joergensen, J. L.
  2012
- **Final Commissioning of the PRISMA GPS Navigation System** *22nd International Symposium on Spaceflight Dynamics*
  Ardaens, J., D'Amico, S., Montenbruck, O.
  2011
- **GPS Navigation Based Proximity Operations by the PRISMA Satellites - Flight Results** *4th International Conference on Spacecraft Formation Flying Missions and Technologies*
  Larsson, R., D'Amico, S., Noteborn, R., Bodin, P.
  2011
- **Proximity Operations of On-Orbit Servicing Spacecraft using an Eccentricity/Inclination Vector Separation** *22nd International Symposium on Spaceflight Dynamics*
  Spurmann, J., D'Amico, S.
  2011
- **Navigation and Control of the PRISMA Formation: In-Orbit Experience** *18th IFAC World Congress*
  D'Amico, S., Larsson, R.
  2011
- **Formation Flying Testbed at DLR's German Space Operations Center** *8th International ESA Conference on Guidance, Navigation & Control Systems*
  Gaias, G., Ardaens, J., D'Amico, S.
  2011
- **In-Flight Demonstration of Formation Control based on Relative Orbital Elements** *4th International Conference on Spacecraft Formation Flying Missions and Technologies*
  D'Amico, S., Ardaens, J., Larsson, R.
  2011
- **Operation Concept of the Precise Autonomous Orbit Keeping Experiment on the PRISMA Mission** *8th IAA Symposium on Small Satellites for Earth Observation*
  De Florio, S., D'Amico, S., Radice, G.
  2011
- **Spaceborne Autonomous Formation Flying Experiment on the PRISMA Mission** *AIAA Guidance, Navigation & Control Conference*
  D'Amico, S., Ardaens, J., Larsson, R.
  2011
- **Autonomous Formation Flying in LEO - Seven months of routine formation flying with frequent reconfigurations** *4th International Conference on Spacecraft Formation Flying Missions and Technologies*
  Larsson, R., Noteborn, R., Bodin, P., D'Amico, S., Karlsson, T., Carlsson, A.
  2011
- **Early Flight Results from the TanDEM-X Autonomous Formation Flying System** *4th International Conference on Spacecraft Formation Flying Missions and Technologies*
  Ardaens, J., D'Amico, S., Fischer, D.
  2011
- **Relative Control of a Virtual Telescope Using Global Positioning System and Optical Metrology** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Perea, L., Ardaens, J., D'Amico, S., Elosegui, P.
  2010; 33 (4): 1281-1287
- **PRISMA - Formation Flying Project Close to Launch** *Small Satellites Systems and Services - The 4S Symposium*
  Persson, S., Harr, J., D'Amico, S., Joergensen, J. L.
  2010
- **Flight Results from the PRISMA GPS-Based Navigation** *5th ESA Workshop on Satellite Navigation Technologies, NAVITEC'2010*

Ardaens, J., D'Amico, S., Montenbruck, O.
2010

- **Autonomous Navigation and Control of Formation Flying Spacecraft on the PRISMA Mission** *61st International Astronautical Congress*
  De Florio, S., D'Amico, S., Ardaens, J.
  2010
- **Hardware-in-the-loop Multi-satellite Simulator for Proximity Operations** *11th Int. WS on Simulation & EGSE facilities for Space Programmes; SESP 2010*
  Gaias, G., D'Amico, S., Boge, T.
  2010
- **Flight Results from PRISMA Formation Flying and Rendezvous Demonstration Mission** *61st International Astronautical Congress*
  Persson, S., D'Amico, S., Harr, J.
  2010
- **Autonomous Formation Flying Based on GPS - PRISMA Flight Results** *6th International Workshop on Satellite Constellation and Formation Flying*
  D'Amico, S., Ardaens, J., De Florio, S.
  2010
- **GPS-Based Spaceborne Autonomous Formation Flying Experiment (SAFE) on PRISMA: Initial Commissioning** *AIAA/AAS Astrodynamics Specialist Conference*
  D'Amico, S., Ardaens, J., De Florio, S., Montenbruck, O., Persson, S., Noteborn, R.
  2010
- **Functional and Performance Validation of the PRISMA Precise Orbit Determination Facility** *2010 International Technical Meeting of the Institute-of-Navigation*
  Ardaens, J., Montenbruck, O., D'Amico, S.
  INST NAVIGATION.2010: 490–500
- **Differential GPS: An Enabling Technology for Formation Flying Satellites** *7th IAA International Symposium on Small Satellites for Earth Observation*
  D'Amico, S., Montenbruck, O.
  SPRINGER-VERLAG BERLIN.2010: 457–465
- **Spaceborne Autonomous Relative Control System for Dual Satellite Formations** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  Ardaens, J., D'Amico, S.
  2009; 32 (6): 1859-1870
- **Relative Orbit Control of a Virtual Telescope in an Eccentric Orbit** *21st International Symposium on Space Flight Dynamics*
  Perea, L., D'Amico, S., Elosegui, P.
  2009
- **Differential GPS: An Enabling Technology for Formation Flying Satellites** *7th IAA Symposium on Small Satellite for Earth Observation*
  D'Amico, S., Montenbruck, O.
  2009
- **PRISMA Relative Orbit Determination using GPS Measurements** *21st International Symposium on Space Flight Dynamics*
  Delong, N., Laurichesse, D., Harr, J., D'Amico, S.
  2009
- **OPTIMAL AUTONOMOUS ORBIT CONTROL OF REMOTE SENSING SPACECRAFT** *AAS/AIAA 19th Space Flight Mechanics Meeting*
  De Florio, S., D'Amico, S.
  UNIVELT INC.2009: 949–967
- **Autonomous Formation Keeping and Reconfiguration for Remote Sensing Spacecraft** *21st International Symposium on Space Flight Dynamics*
  D'Amico, S., De Florio, S., Larsson, R., Nylund, M.
  2009

- **Navigation of Formation Flying Spacecraft using GPS: the PRISMA Technology Demonstration** *22nd International Technical Meeting of the Satellite Division of the Institute-of-Navigation (ION GNSS-09)*
  D'Amico, S., Ardaens, J., Montenbruck, O.
  INST NAVIGATION.2009: 1427–1441
- **The Precise Autonomous Orbit Keeping Experiment on the PRISMA Mission** *JOURNAL OF THE ASTRONAUTICAL SCIENCES*
  De Florio, S., D'Amico, S.
  2008; 56 (4): 477-494
- **Navigation and Control of the TanDEM-X Formation** *Symposium Honoring Byron Tapley's 50 Years of Contributions*
  Montenbruck, O., Kahle, R., D'Amico, S., Ardaens, J.
  AMER ASTRONAUTICAL SOC.2008: 341–57
- **Hardware-in-the-loop Demonstration of GPS-Based Autonomous Formation Flying** *4th ESA Workshop on Satellite Navigation User Equipment Technology, NAVITEC'2008*
  Yamamoto, T., D'Amico, S.
  2008
- **GPS-Based Relative Navigation during the Separation Sequence of the PRISMA Mission** *AIAA Guidance, Navigation and Control Conference*
  D'Amico, S., Montenbruck, O., Larsson, R., Chasset, C.
  2008
- **Autonomous Formation Flying - TanDEM-X, PRISMA and Beyond** *5th International Workshop on Satellite Constellations and Formation Flying*
  D'Amico, S., Ardaens, J., De Florio, S., Montenbruck, O.
  2008
- **Offline and Hardware-in-the-loop Validation of the GPS-based Real-Time Navigation System for the PRISMA Formation Flying Mission** *3rd International Symposium on Formation Flying, Missions and Technology*
  D'Amico, S., De Florio, S., Ardaens, J., Yamamoto, T.
  2008
- **TanDEM-X Autonomous Formation Flying System** *3rd International Symposium on Formation Flying, Missions and Technology*
  Ardaens, J., D'Amico, S., Ulrich, D., Fischer, D.
  2008
- **The precise autonomous orbit keeping experiment on the prisma formation flying mission** *AAS/AIAA 18th Space Flight Mechanics Meeting*
  De Florio, S., D'Amico, S., Fernandez, M. G.
  UNIVELT INC.2008: 1679–1694
- **Cross-Validation of GPS and FFRF-Based Relative Navigation for the PRISMA Mission** *4th ESA Workshop on Satelliate Navigation User Equipment Technology, NAVITEC'2008*
  Montenbruck, O., Delpech, M., Ardaens, J., Delong, N., D'Amico, S., Harr, J.
  2008
- **Autonomous formation flying for the PRISMA mission** *AAS/AIAA 16th Space Flight Mechanics Meeting*
  Gill, E., D'Amico, S., Montenbruck, O.
  AMER INST AERONAUT ASTRONAUT.2007: 671–81
- **First In-orbit Experience of TerraSAR-X Flight Dynamics Operations** *20th International Symposium on Space Flight Dynamics*
  Kahle, R., Kazeminejad, B., Kirschner, M., Yoon, Y., Kiehling, R., D'Amico, S.
  2007
- **Spaceborne Autonomous and Ground Based Relative Orbit Control for the TerraSAR-X/TanDEM-X Formation** *20th International Symposium on Space Flight Dynamics*
  Ardaens, J., D'Amico, S., Kazeminejad, B., Montenbruck, O., Gill, E.
  2007
- **Autonomous Formation Flying at DLR's German Space Operations Center (GSOC)** *58th International Astronautical Congress*
  Rupp, T., D'Amico, S., Montenbruck, O., Gill, E.
  2007

- **E/I-vector separation for safe switching of the GRACE formation** *AEROSPACE SCIENCE AND TECHNOLOGY*
  Montenbruck, O., Kirschner, M., D'Amico, S., Bettadpur, S.
  2006; 10 (7): 628-635
- **Proximity operations of formation-flying spacecraft using an eccentricity/inclination vector separation** *JOURNAL OF GUIDANCE CONTROL AND DYNAMICS*
  D'Amico, S., Montenbruck, O.
  2006; 29 (3): 554-563
- **Interferometric baseline performance estimations for multistatic synthetic aperture radar configurations derived from GRACE GPS observations** *JOURNAL OF GEODESY*
  Kohlhase, A. O., Kroes, R., D'Amico, S.
  2006; 80 (1): 28-39
- **Evaluating interferometric baseline performance in a close formation flight by using relative GRACE GPS navigation solutions** *19th International Symposium on Space Flight Dynamics*
  Kohlhase, A., Kroes, R., D'Amico, S.
  2006
- **Relative Orbit Control Design for the PRISMA Formation Flying Mission** *AIAA Guidance, Navigation, and Control Conference*
  D'Amico, S., Gill, E., Montenbruck, O.
  2006
- **The TanDEM-X Mission Design and Data Acquisition Plan** *6th European Conference on Synthectic Aperture Radar*
  Fiedler, H., Krieger, G., Werner, M., Reiniger, K., Eineder, M., D'Amico, S., Diedrich, E., Wickler, M.
  2006
- **Autonomous satellite formation flying for the PRISMA technology demonstration mission** *AAS/AIAA 16th Space Flight Mechanics Meeting*
  Gill, E., Montenbruck, O., D'Amico, S., Persson, S.
  UNIVELT INC.2006: 331–342
- **Next Generation GNSS for Navigation of Future SAR Constellations** *57th International Astronautical Congress*
  Enderle, W., Fiedler, H., De Florio, S., Krieger, G., Jochim, F., D'Amico, S., Dawson, S., Kellar, W.
  2006
- **Relative Orbit Control Design for the PRISMA Formation Flying Mission** *AIAA Guidance, Navigation, and Control Conference*
  D'Amico, S., Gill, E., Montenbruck, O.
  2006
- **Formation flying concept for close remote sensing satellites** *AAS/AIAA 15th Space Flight Mechanics Meeting*
  D'Amico, S., Montenbruck, O., Arbinger, C., Fiedler, H.
  UNIVELT INC.2005: 831–848
- **Impact of orbit prediction accuracy on low earth remote sensing flight dynamics operations** *18th International Symposium on Space Flight Dynamics*
  Arbinger, C., D'Amico, S.
  ESA PUBLICATIONS DIVISION C/O ESTEC.2004: 73–78
- **Generation of an optimum target trajectory for the TerraSAR-X repeat observation satellite** *18th International Symposium on Space Flight Dynamics*
  D'Amico, S., Arbinger, C., Kirschner, M., Campagnola, S.
  ESA PUBLICATIONS DIVISION C/O ESTEC.2004: 137–142
- **Precise ground-in-the-loop orbit control for low earth observation satellites** *18th International Symposium on Space Flight Dynamics*
  Arbinger, C., D'Amico, S., Eineder, M.
  ESA PUBLICATIONS DIVISION C/O ESTEC.2004: 333–338
- **The GRACE Formation: Science Mode Pointing Performance Analysis** *3rd International Workshop on Satellite Constellations and Formations*
  Arbinger, C., D'Amico, S., Feucht, U., Finzi, A.
  2003

PRESENTATIONS

- Autonomous Formation Flying: TanDEM-X, PRISMA, and Beyond - 19th IFAC Symposium on Automatic Control in Aerospace (September 3, 2013)
- Spacecraft Formation Flying: from Vision to Reality - Stanford University (October 6, 2012)
- DLR’s Contributions to the PRISMA Mission - French Space Agency (CNES) (June 29, 2012)
- Formation Flying: from Vision to Mission - University of Wuerzburg (February 6, 2012)
- Flight Results from DLR's GNC Contributions to the PRISMA Mission - German Aerospace Center (DLR) (September 30, 2011)
- Navigation and Control of the PRISMA Formation: In-Orbit Experience - 18th World Congress of the International Federation of Automatic Control (IFAC) (August 29, 2011)
- PRISMA Formation Flying: From Vision to Mission - German Aerospace Center (DLR) (March 15, 2011)
- Relative GPS-based Navigation for PRISMA: Flight Results - Canadian Space Agency (CSA) (January 28, 2011)
- Spacecraft Formation Flying at DLR/GSOC - University of New South Wales (UNSW) (January 21, 2011)
- DLR’s Contributions to PRISMA – Flight Results - ESA's Space Research and Technology centre (ESTEC) (November 16, 2010)
- TerraSAR-X Ground-in-the-loop Orbit Control - Taiwan National Space Organization (NSPO) (November 5, 2010)
- Autonomous Formation Flying based on GPS – PRISMA Flight Results - Taiwan National Space Organization (NSPO) (November 5, 2010)
- Autonomous Formation Flying Based on GPS - PRISMA Flight Results - 6th International Workshop on Satellite Constellation and Formation Flying (November 2, 2010)
- Spaceborne Autonomous Formation Flying Experiment (SAFE) on the PRISMA Mission - German Aerospace Center (January 27, 2010)
- Differential GPS: An Enabling Technology for Formation Flying Satellites - 7th IAA Symposium on Small Satellites for Earth Observation (May 6, 2009)
- Spacecraft Formation Flying: from Vision to Reality - National Aeronautics and Space Administration Ames (October 10, 2012)
- Formation Flying: from Vision to Mission - Jet Propulsion Laboratory (August 25, 2008)
- Autonomous Orbit Keeping and Formation Flying - French Space Agency (CNES) (November 22, 2007)
- Formation Flying of Spacecraft Using an Eccentricity/Inclination Vector Separation - German Aerospace Center (November 17, 2006)
- TerraSAR-X Ground-in-the-loop Orbit Control - French Space Agency (CNES) (July 6, 2006)
- TanDEM-X Formation Flying - French Space Agency (CNES) (July 6, 2006)