

## John E Hurtado

Research and Development Engineer 6  
Associate Laboratory Directorate for Weapons Engineering  
Los Alamos National Laboratory

Professor Emeritus of Aerospace Engineering  
Texas A&M University  
Academic website <https://hurtado.tamu.edu/>

## Professional Preparation

San Diego State University	San Diego, CA	Aerospace Engineering	BS	1988
Texas A&M University	College Station, TX	Aerospace Engineering	MS	1991
Texas A&M University	College Station, TX	Aerospace Engineering	PhD	1995

## Appointments

May 2024 – Present	Professor Emeritus of Aerospace Engineering, Texas A&M University, College Station, TX
Jan 2024 – Present	Research and Development Engineer 6 within the Associate Laboratory Directorate for Weapons Engineering, Los Alamos National Laboratory, Los Alamos, NM
Mar 2024 – Jul 2024	Acting Group Leader for the Advanced Engineering Analysis Group, W-13, Los Alamos National Laboratory, Los Alamos, NM
Aug 2023 – Dec 2023	Returned to faculty, Department of Aerospace Engineering
Jun 2021 – Jul 2023	Interim Vice Chancellor of Engineering, The Texas A&M University System, College Station, TX
Jun 2021 – Jul 2023	Interim Dean of Engineering, Texas A&M University, College Station, TX
Jun 2021 – Jul 2023	Interim Agency Director, Texas A&M Engineering Experiment Station, College Station, TX
Jul 2019 – May 2021	Deputy Director and Chief Technology Officer, Bush Combat Development Complex, Texas A&M Engineering Experiment Station, College Station, TX
Feb 2019 – Jun 2019	Platform Lead, Precision Navigation & Timing, College of Engineering, Texas A&M University, College Station, TX
Nov 2018 – Aug 2019	Interim Department Head of Nuclear Engineering, Department of Nuclear Engineering, Texas A&M University, College Station, TX
Sep 2015 – Aug 2019	Associate Dean for Academic Affairs, College of Engineering, Texas A&M University, College Station, TX
Jan 2015 – Aug 2015	Senior Director for Interdisciplinary Programs, full-time appointment, College of Engineering, Texas A&M University, College Station, TX
Sep 2014 – Dec 2014	Senior Director for Interdisciplinary Programs, half-time appointment, College of Engineering, Texas A&M University, College Station, TX
Sep 2014 – Present	Professor, Department of Aerospace Engineering, Texas A&M University, College Station, TX
Jun 2013 – Aug 2013	University Summer Faculty Sabbatical, Navigation, Guidance, and Control, Sandia National Laboratories, Albuquerque, NM
Nov 2012 – Aug 2014	Associate Department Head and Director of Graduate Programs, Department of Aerospace Engineering, Texas A&M University, College Station, TX
Jun 2011 – Aug 2011	University Summer Faculty Sabbatical, Water Power Technologies, Sandia National Laboratories, Albuquerque, NM
Sep 2007 – Aug 2014	Associate Professor, Department of Aerospace Engineering, Texas A&M University, College Station, TX
Jan 2001 – Aug 2007	Assistant Professor, Department of Aerospace Engineering, Texas A&M University, College Station, TX
1999 – Dec 2000	Principal Member of Technical Staff, Sandia National Laboratories, Albuquerque, NM
Aug 1995 – 1999	Senior Member of Technical Staff, Sandia National Laboratories, Albuquerque, NM

## Six Impactful Publications (\* student)

1. Hurtado, J.E., "First-Order Forms in Analytical Dynamics," accepted by the Journal of Guidance, Control, and Dynamics, 31 May 2024.
2. Hurtado, J.E., "Analytical Dynamics of Variable-Mass Systems", Journal of Guidance, Control, and Dynamics, Vol. 41, No. 3, 2018, pp.701-9.

3. Hurtado, J.E., Sinclair, A.J., "State Transition Matrix, Motion Constants, and Ergodicity of the Euler-Poinsot Problem", *Nonlinear Dynamics*, Vol. 85, Iss. 3, 2016, pp. 2049–63.
4. Sinclair, A.J., and Hurtado, J.E., "The Motion Constants of Linear Time-invariant Dynamic Systems," *Applied Mechanics Reviews*, Vol. 65, Iss. 4, 2013, 9 pages.
5. Hurtado, J.E., and Sinclair, A.J., "Lagrangian Mechanics of Overparameterized Systems," *Nonlinear Dynamics*, Vol. 66, Iss. 1, 2011, pp. 201-12.
6. Hurtado, J.E., and Sinclair\*, A.J., "Hamel Coefficients for the Rotational Motion of an N-Dimensional Rigid Body", *Proceedings of the Royal Society of London Series A: Mathematical, Physical and Engineering Sciences*, Vol. 460, No. 2052, 2004, pp. 3613-30.

### **Other Significant Work**

Co-inventor on three patents associated with mobile robotics and distributed optimization including miniature robots that now reside in the National Museum of American History at the Smithsonian Institution.

### **Synergistic Activities**

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|------------------------|--|
| Jun 2021 –<br>Jul 2023 | As Interim Vice Chancellor and Dean, achieved for the first time ever the number one ranking in engineering research expenditures, surpassing MIT (USNWR academic year 2023): \$444.7M. Also achieved institutional goal of 25,000 engineering students by the year 2025 (25x25) in fall semester 2023.  |
| Fall 2020              | Co-chaired the Texas A&M University President’s Commission on Diversity, Equity and Inclusion resulting in a nearly 100-page report with findings across the principal areas of mission and values, campus culture and climate, data and policies, and community engagement.   |
| 2014 – 2018            | Designed, established, and shepherded eight education programs that are excellent examples of innovations in teaching and learning including entrepreneurship, leadership, the intersection of engineering and medicine, interdisciplinary programs, and the inclusion of art into curriculum.   |
| 2001 – present         | Contributed to the creation and integration of knowledge for the academic community through groundbreaking and innovative work in analytical dynamics: Provided the first-ever clear understanding of minimal, redundant, and overparameterized descriptions for Lagrangean mechanics, which is a field that is more than 200 years old; provided the first-ever treatment of complete motion constants for all linear time-invariant autonomous systems; provided a novel and original state transition matrix, set of motion of constants, and ergodicity check for the Euler-Poinsot problem, which is the most classic among rigid body rotational motion problems; and provided a new rigorous analytical dynamics development and set of Lagrangean equations for variable mass systems. |

### **PhD Research Advisor**

John L. Junkins, Texas A&M University, Distinguished Professor of Aerospace Engineering, Regents Professor, Holder of the Royce E. Wisenbaker Chair, Founding Director of the Texas A&M University Hagler Institute for Advanced Study, National Academy of Engineering Member, and National Academy of Inventors Member.

### **Collaborators**

Kurt Aures-Cavaliere (Sandia National Laboratories), Kevin Brink (Munitions Directorate, Eglin AFB), Brian Owens (Sandia National Laboratories), Julie Parish (Sandia National Laboratories), Carolina Restrepo (NASA GSFC), Andrew J. Sinclair (Space Vehicle Directorate, KAFB), and Humberto Ramos Zuniga (University of Florida Innovation Station, REEF).

### **Former Student Advisement (past five years; more than 40 students total)**

Timothy Woodbury (Senior Aerospace Engineer, Emergent Space Technologies, Inc.), Humberto Ramos Zuniga (Postdoctoral researcher, University of Florida Innovation Station at the Research and Education Engineering Facility), Gregory Arleth (Aerospace Software Engineer, Odyssey Space Research), and COL Chris Hill (Project Manager, Integrated Fires Mission Command).