

## SHORT Curriculum Vitae

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**Prof Herman Steyn, BEng (Hons), MEng, MSc, PhD, SMAIAA, FSAAE, MIAA, Pr Ing**

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**Job Title** University of Stellenbosch: Professor in Electronic Engineering, Head of Electrical and Electronic Engineering Department

Denel Spaceteq and SA Space Industry: Consultant in AODCS

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**Qualifications** PhD – “A Multi-Mode Attitude Determination and Control System for Small Satellites”, from University of Stellenbosch (South Africa) 1995

MSc – “Attitude Control Algorithms and Simulation Programs for Low Earth Orbit Spacecraft”, from University of Surrey (UK) 1990

MEng – “Register Insertion Ring Network”, from University of Stellenbosch (South Africa) 1985

BEng (Hons), Electrical and Electronic Engineering from University of Stellenbosch (South Africa) 1980

Over 100 published international papers, 27 in accredited Journals, C1 rated researcher by National Research Foundation in South Africa. In 2009 he was elected as Fellow of the South African Academy of Engineers. In 2011 he was elected as Corresponding Member and in 2014 as Full Member of the International Academy of Astronautics.

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**Career History**

- 2013-15 – Head of Computer, Control and Satellite Group within the Dept E&E Engineering at the University of Stellenbosch
  - 2011-12 – Head of Department Electrical and Electronic Engineering at the University of Stellenbosch
  - 2006-10 – Head of the Computer and Control Group within the Dept E&E Engineering at the University of Stellenbosch
  - 2004 – Professor in Electronic Engineering at University of Stellenbosch
  - 2002 – Head: Product Development at SSIS, Professor in Electronic Engineering at the University of Stellenbosch, South Africa
  - 1998 – Principal Engineer and Team Leader AODCS at SSTL, UK.
  - 1997 – Associate Professor in Electronic Engineering at University of Stellenbosch, South Africa.
  - 1987-96 – Senior Lecturer in Electronic Engineering at University of Stellenbosch
  - 1982-87 – Lecturer in Electronic Engineering at University of Stellenbosch
  - 1981 – Assistant Area Engineer (Instrumentation) SASOL 2
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**Experience and skills**

Herman has done a MSc in Satellite Engineering in 1990 in the Surrey Space Centre (UoSAT Unit) while he was still a lecturer in Electronic Engineering in South Africa. When he returned to his University, he became part of a team who

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designed and build the first South African microsatellite SUNSAT. He became the prime designer of the ADCS system for SUNSAT, the first microsatellite with full 3-axis control capability and a high resolution pushbroom imager

His research interest since 1990 concentrated on attitude determination and control hardware and software subsystems for small satellites. He joined SSTL as Principal Engineer in 1998 as the Team leader for spacecraft attitude and orbit control systems. At SSTL he was personally involved in six new satellite programs (1998 to 2001). He lead the planning, design and implementation of the AODCS system for SSTL's first 3-axis stabilized minisatellite UoSAT-12, microsatellite Tsinghua-1 and nanosatellite SNAP-1. He was also the technical lead for the development of a momentum wheel for the ESA Rosetta Lander spacecraft and responsible for the in-house development and calibration of various attitude sensors and actuators e.g. sun sensors, reaction wheels, magnetorquer rods and control moment gyros (CMGs).

He was also involved in various studies for NASA, ESA and commercial customers on new satellite missions, e.g. MMS (Multiscale Magnetospheric System) a constellation of spinning satellites with wire booms for NASA, GEODEM (Geostationary Demonstration Satellite) a bus design to fly various payloads for ESA into GEO and RAPIDEYE a constellation of minisatellites with high performance pointing requirements.

When he returned to South Africa in the beginning of 2002 he rejoined the University of Stellenbosch as a Professor in the Computer and Control Group of the Department Electrical and Electronic Engineering, currently he is also the Head of Department. Apart from supervising Masters and PhD students, he is responsible for post graduate modules in Satellite and Space Engineering and Advanced Control Systems and leading a research program in advanced attitude and orbit control systems. He is a executive Director of SunSpace & Information Systems and consultant for the AODCS group, leading the development and design of all commercial AODCS systems. Satellites already completed and qualified, includes an earth observation minisatellite for an international customer and South Africa's second micro-satellite, SumbandilaSat. The first satellite was launched in April 2007 and Sumbandila was launched in September 2009, both in low earth orbit.

He was elected as Member of the International Academy of Astronautics (IAA) in 2014. Herman is currently leading the partnership of the University of Stellenbosch with the Surrey Space Centre on a EU FP7 project called "Deorbit Sail", where a solar sail will deployed and actively controlled to accelerate the deorbiting of space debris in future.

He was leading the Space Engineering Expert Group (SEEG) of the National Space Program (NSP) of the South African National Space Agency (SANSA) during 2012.

He is currently the project leader of the international QB50 mission for the ZA-AeroSat Cubesat, the launch date for these 50 Cubesats from more than 50 institutions world-wide will be January 2017.

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