William Hrudey Caribbean Astronomy Conference

Opportunities and Challenges for Caribbean Astronomy

23rd—25th May, 2018

Cayman Islands Chamber of Commerce

23 Lime Tree Bay Avenue, West Bay Road

Governor's Square, Grand Cayman

KI1-1102, Cayman Islands

Dr. William Hrudey, MBE

Gigi pins on Bill's MBE , with Governor Kilpatrick

Gigi Bill and Lance

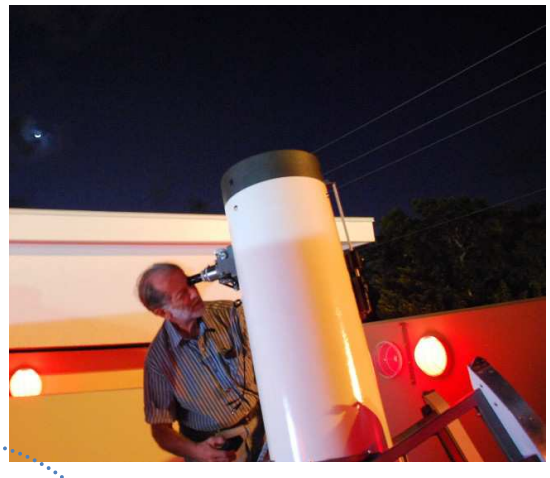
UCCI President Roy Bodden with Bill and his model of the Goldfield

Dr William Hrudey (March 18, 1941 – February 22, 2018)

This Caribbean Astronomy conference is named in honour of the brilliant retired surgeon, Dr. William Hrudey for whom Astronomy was a lifelong passion and whose idea it was to host this conference in Grand Cayman. He had begun planning efforts when he was diagnosed with cancer in November 2017. On learning of this, he immediately made his presentation available for this conference to his close colleague and friend Prof. Edward Guinan for presentation at the conference in the event he could not make it till then. As life would have it, the great Dr. Hrudey unfortunately passed away on February 22nd 2018.

Dr. William Hrudey moved to Grand Cayman from Canada in 1997 after a successful medical career. With a life-long interest in science and, as an amateur astronomer in his teens, Dr. Hrudey now had the time to build his "dream" telescope. Though hurricane Ivan destroyed most of the first version in 2004, it was rebuilt and offered to the University College of Cayman Islands (UCCI). It is housed along with a fleet of smaller telescopes at the UCCI Dr. William Hrudey Observatory, located on the campus. Dr. Hrudey was the Observatory Director, rendering the observatory capable of both solar and night sky CCD imaging. Hundreds of school students toured the Observatory in order to inspire them towards science. The observatory was to serve as a catalyst for many Astronomy and thereafter STEM related activities. Dr. Hrudey had been involved heavily in the Rotary Science Fairs but truly, his landmark effort came with the STEM Carib conferences that were his brainchild. The first one was held in 2012 and it has been held annually since growing from strength to strength. So, it was a well deserved honour when at STEM Carib 2017 Dr. Hrudey was presented with the Faculty Award 2017 bestowed by *The International Association of University Presidents* in recognition of his contribution with the building of the observatory, the running of Astronomy courses and notably the STEM Carib conferences – the first of its kind in the Grand Cayman. For the first time students had an opportunity to meet scientists from around the world and listen to cutting edge talks on science.

The highest honour came with the announcement from her Royal Highness the Queen who bestowed upon Dr. William Hrudey, the Most Excellent Order of the British Empire, M.B.E, for services for promoting Science Education in the Cayman Islands. This speaks volumes for the contribution that Dr. Hrudey had made to his second home, through his vision, his foresight, and tireless efforts to make the world a scientifically better educated place. He changed the trajectory of the many many lives he touched and left his indelible mark on science in the Grand Cayman. He will forever be missed.



The William Hrudey Observatory with the roof open.

UNIVERSITY COLLEGE OF THE CAYMAN ISLANDS

OPENING REMARKS AND GREETINGS

UCCI President Roy Bodden JP

J. A. Roy Bodden, JP
President, University College of the Cayman Islands

Roy Bodden first and foremost an educator, cultural historian and visionary writer, graduated with honours from Mico University College, Jamaica. In 1967 he returned home to become the first Principal of East End Primary School.

He subsequently went on to receive his Bachelors at Trent University, Ontario, Canada, and his Masters in Education from Queens University, Ontario, Canada. Having completed these studies, he enrolled in the Graduate Studies programme of the The Maxwell School of Citizenship and Public Affairs, Syracuse University.

In 1988 he was elected to represent the district of Bodden Town in the Legislative Assembly and served four consecutive terms until 2005. He was the Minister of Education, Human Resources and Culture from 2000 to 2005.

In 2003, in recognition of his services in Education and Community Affairs, a Doctor of Humanities (Honoris Causa) was conferred upon Roy by the International College of the Cayman Islands; and in 2011 he received the Distinguished Alumni Award from Trent University, Ontario, Canada.

Roy has written and published several books on the social, cultural, economic and political evolution of the Cayman Islands –

- *The Cayman Islands: Social, Political and Economic Challenges 1950-1978 (Nor'Wester magazine Oct 1978)*
- *The Cayman Islands in Transition: The Politics, History and Sociology of a Changing Society;*
- *Stories My Grandfather Never Told Me: A Collection of Caymanian Short Stories;*
- *Patronage, Personalities and Parties: Caymanian Politics From 1950 to 2000;*
- *A Gathering of Old Men - a collection of stories from Guard House*
- *Reflections from a Broken Mirror – Poems about a Caymanian society*

Roy Bodden was appointed President of the University College of the Cayman Islands on 19th October, 2009.

Keynote Speaker Allyson Bieryla

Equal Participation: The future of Astronomy

Bio

I am the manager of the astronomy lab and telescopes used for teaching at Harvard University and an astronomer at the Harvard-Smithsonian Center for Astrophysics. I am interested in the detection and characterization of exoplanets. My work involves spectroscopic and photometric follow up of exoplanet candidates from space and ground based surveys. I care deeply about inclusion and accessibility and am working on tools to make astronomy more accessible.

Wednesday 9.45—10.45

Joining Allyson Bieryla by Skype: Dr. Wanda Diaz-Merced

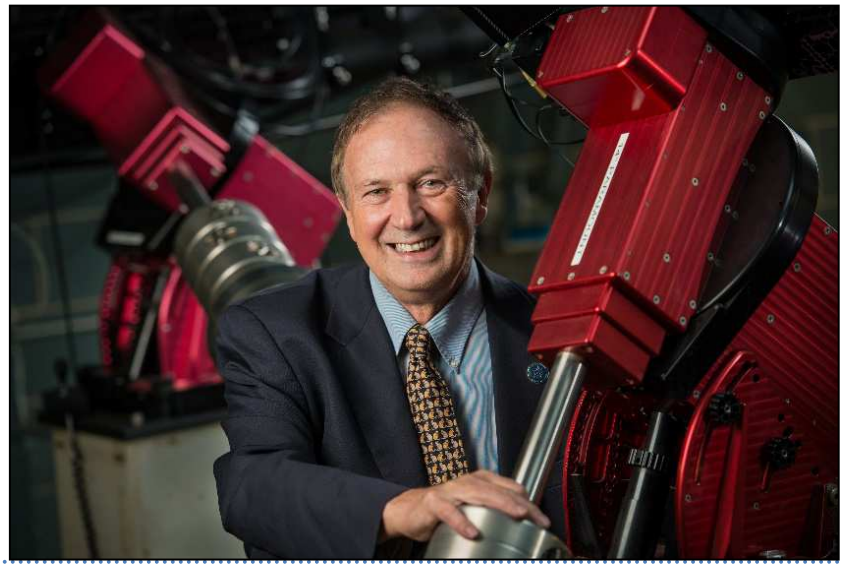
Wanda L. Diaz-Merced is a resident of Gurabo, Puerto Rico. She is a PhD from the University of Glasgow, Scotland majoring in Computer Science with previous degree in physics. The main reason for choosing this major was the interest she has in developing ways to use the human ability to adapt to the data and her enthusiasm towards heliophysics. Wanda has published scientific papers on the exploration of xray data finding quasi-periodic oscillations , solar wind and gamma ray data amongst others. Wanda evidenced that the use of sound as an adjunct to visual display increases the sensitivity of traditional astronomers to events that my be masked to the eye. She did 9 internships through the NASA SIECA Program and over the summer she worked working in Code 672, the Heliophysics division using sound to analyze the inner heliosphere. In her spare time she enjoys developing lessons and visiting schools to bring the world of astrophysics close to people. In the future she plans to contribute to continue opening the field of science to any kind of learner.

William Hrudey Presentation—Ed Guinan

Bio-Sketch: Edward F. Guinan

Edward Guinan, a Professor of Astrophysics and Planetary Science at Villanova University, is a pioneer in astronomy and space science research that studies our Sun, stars, and planets inside and outside our solar system, as well as the search for life on these planets. His research efforts are primarily aimed at studying the effects that X-ray & UV radiation from host stars have on their planets and to determine if these exoplanets are potentially habitable. Recently Guinan worked with a European team to study the potential habitability of the nearest Earth-size exoplanet, Proxima b and found that this planet is temperate and has the potential to support life. During 2017 he established an astrobiology-based program "Mars Gardens: The Red Thumbs Project" testing growing vegetables under Mars reduced ambient light and in Martian regolith simulant. He has published over 700 papers and edited four books. At Villanova, he teaches Astrobiology, Meteorology, Paleoclimatology and Cosmology. His research has been supported primarily by grants from the National Aeronautics and Space Administration (NASA) and the National Science Foundation.

He has been active in establishing and promoting international astronomy education, research and outreach programs in developing countries sponsored by the International Astronomical Union (IAU). Since 2012 he has been the Chair of the Astronomy for Universities and Research Program at the IAU Office of Astronomy for Development (IAU/OAD). He participates in CARIB-STEM programs held at the University College of the Cayman Islands (UCCI) since 2012.



Wednesday 11.15—12.00

David Brown

Control Mechanisms for Telescopes

With over twenty years' experience in the aviation industry. Initially as a Hardware Engineer designing electronic systems, subsequently as a Software Engineer developing Engine Management systems through to Primary Flight Computers. Ultimately David became a Systems Engineer designing elements of some of today's most prestigious aircraft including the Airbus A380 (the largest civilian aircraft in the world) and Boeing's new 787 'Dreamliner'. More recently David was involved with the creation of aviation standards for the Airline Industry as a whole.

Wednesday 1.00—1.25

Ruud Van Der Pluijm

Portable Earthquake Detection Device

Mr. Ruud van der Pluijm is from the Netherlands and spent a life long career in software development. Learned Fortran programming in 1969 at Philips, became an assembler programmer at Nixdorf Computers, C programmer and R & D Manager at Holland Automation, Product manager / Managing Director at Seagull Business Software.

Worked on driver software, file systems and operating systems in Germany, Curacao, Ireland and the USA. His presentation is about the affordable earthquake monitor based on the Raspberry Pi from www.raspberryshake.org

Wednesday 1.25—1.35

Brandon Rajkumar

A Fractal Analysis of Sunspot Magnetograms

Bio: Brandon Rajkumar is in his 2nd year pursuing an MPhil in Physics at The University of the West Indies with a focus on Solar Physics. He is a co-founder of the UWI StarGazers and member of CARINA. His experience in observational Astronomy has allowed him to work at the SATU Observatory on projects such as the Monitoring of OJ 287 and the Monitoring of (Rosetta) Comet 67P.

Wednesday 1.45—2.30

David Morris

Astronomy Activities and Research

David Morris is an assistant professor of physics and astronomy at the University of the Virgin Islands (UVI) and is the Director of UVI's Etelman Observatory. He is also the Director of UVI's new Bachelor of Science in Physics program and the NASA EPSCoR Jurisdiction Director for the USVI. He moved to St. Thomas in 2011 after working previously at NASA's Goddard Space Flight Center in Greenbelt, MD where he was a member of the Science Mission Directorate. His research at NASA focused primarily on phenomena related to gamma-ray bursts (GRBs), specifically late-time episodes of emission known as flares, during which the GRB central engine restarts its emission process, sometimes days or weeks after the GRB initial explosion.

At UVI, Dr. Morris has overseen the reopening of the Etelman Observatory to the public (in 2012), has instituted the Observatory's first ever summer research internship program (begun in 2013), and has developed research ties between UVI and a wide array of mainland research institutions including NASA's Goddard Space Flight Center, and the Harvard Smithsonian Center for Astrophysics. In 2015, Dr. Morris spearheaded the effort to establish a Bachelor of Science program in physics at UVI which was the first of its kind at UVI and one of only a handful of physics programs at HBCUs across the United States. This program, which was approved by the University in 2016, now involves some 20-30 students each year in a variety of research areas from astrophysics to renewable energy technology and aerospace engineering.

Dr. Morris is particularly excited to have led the rapid growth of the physics and astronomy research group at UVI, which now includes 5 full-time astrophysicists (compared to 0 full-time astrophysicists before Dr. Morris' arrival) and a host of committed and enthusiastic students, volunteers, and community supporters. The effort to raise the level of physics and astronomy research at UVI culminated in the last year with 2 landmark accomplishments: the Etelman Observatory's participation in the 2017 discovery of GW170817, the first source ever detected in both gravitational waves and optical light; and the award of a grant to develop the UVI-BurstCube, the first-ever satellite to be developed entirely in the USVI and which will launch

Wednesday 2.30—3.15

Chris Murphy

Deep, Wide, FAST survey of Transients

Chris Murphy was born and raised in the island of St. Thomas. He is studying Physics with a concentration in Astronomy at the University of the Virgin Islands. After his freshman year in UVI, Chris researched at NASA Goddard Space Flight Center where he went from knowing very little about research techniques and Astronomy, to completely falling in love with Physics, Astronomy and research. The experience was so highly enjoyable, that as soon as he returned to UVI, he asked Dr. Cucchiara to be his mentor. Since then, Chris has worked with Dr. Cucchiara classifying transients and designing a python program to query astronomical databases to go on the “Deeper Wider Faster” website. At the AAS 2018 winter meeting, he got the opportunity to present his poster titled, "Real-time Automatic Search for Multi-wavelength counterparts of DWF transients." This summer Chris will be part of the Berkeley Search for Extraterrestrial intelligence team (SETI Breakthrough Listen Summer REU).

Wednesday 3.15—4.00

Bill at display of his Solar Photography at the National Gallery

Bill with Shirin at the STEM Conference 2018

Greg Merrick

Current Trends in Planetarium Design

Bio

Mr. Gregory Merrick is co-founder and Managing Director of St. George & Associates Ltd., an International Business Corporation (IBC) providing management services to Canadian-owned subsidiaries. He holds degrees in Mathematics and Business Administration from the University of Waterloo and Wilfrid Laurier University, and serves on the Board of several private and publicly traded companies. He is past President of The Barbados Astronomical Society, a not-for-profit corporation operating from the Harry Bayley Observatory in Clapham, Barbados, where he has been a member since 1995.

He is an avid amateur astronomer and travels regularly to dark sky sites across five continents in pursuit of his hobby. He observed the 2018 total solar eclipse from Grand Island, Nebraska, and has recently returned from his fourth observing trip to the Atacama Desert in Chile.

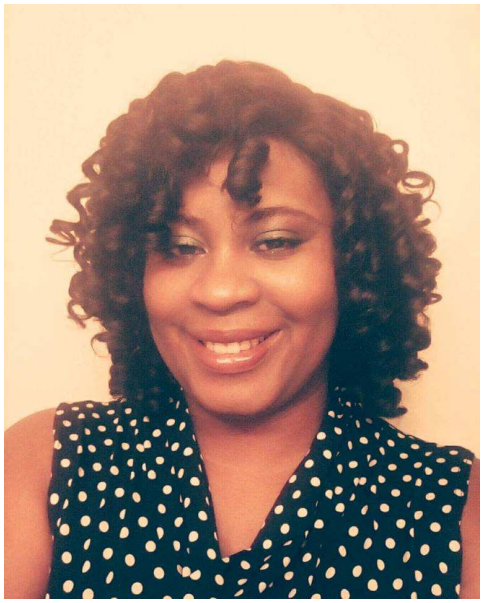
Thursday 9.00—9.45

Akeisha Belgrave

Microbial Life in Space: How Bacterial Cells Adapt to their Environment

Biography

Akeisha Belgrave, PhD is Assistant Professor of Applied Mathematics & Biological Sciences at Harrisburg University of Science & Technology. She has been teaching Mathematics for five years and has a doctoral degree in the Biomedical Sciences. She conducted research in Cell Analysis and Modeling and Biophysics at the University of Connecticut Heath Center and Princeton University as a doctoral student and postdoctoral student respectively. She has conducted extensive studies on the shape maintenance and motility of rod-shaped bacteria and is currently working with undergraduate students at the university to probe aquatic biofilms towards a healthy ecosystem. Her other research projects include determining the effects of bacterial cell wall turnover towards a change in antibiotic efficacies, motility and cell shape.



Thursday 9.45—10.30

Nathan Henderson

Jamaica: Listening to the Sky

Leaford Nathan Henderson: Bio

(Leaford) Nathan Henderson is the President of the Astronomical Association of Jamaica, and a technical staff member and postgraduate student in the Department of Physics, UWI, Mona. A strong believer in science education and awareness, his research interests include renewable energy generation and management by day, and astronomy & astrophotography by night, along with other hobbies such as sports, music, and nature photography.

Thursday 11.00—11.45

Javier Mejuto

The Sky Through Another's Eyes:

Bio: Javier Mejuto is cultural astronomer and professor at Universidad Nacional Autonoma de Honduras. Currently he is chairing Ethnoastronomy Section at Archaeoastronomy and Cultural Astronomy Department at Space Sciences Faculty and he is former head of the same department. Dr. Mejuto works mainly in ethnoastronomy of indigenous peoples of Central America and archaeoastronomy in european and mesoamerican cultural contexts.

Thursday 1.00—1.45

William Hrudey Presentation—Brandon Rajkumar Exhibit—Sun

Bio: Brandon Rajkumar is in his 2nd year pursuing an MPhil in Physics at The University of the West Indies with a focus on Solar Physics. He is a co-founder of the UWI StarGazers and member of CARINA. His experience in observational Astronomy has allowed him to work at the SATU Observatory on projects such as the Monitoring of OJ 287 and the Monitoring of (Rosetta) Comet 67P.

Thursday 1.45—2.30

Dr. William Schonberg

Mega Satellite Constellations—an Astronomer's Friend, or Foe

Dr. William P. Schonberg, P.E., is a Professor in the Civil, Architectural, and Environmental Engineering Department at the Missouri University of Science and Technology. Dr. Schonberg has over 30 years teaching and research experience in the areas of shock physics, spacecraft protection, hypervelocity impact, and penetration mechanics. He received his BSCE from Princeton University in 1981, and his MS and PhD degrees from Northwestern University in 1983 and 1986, respectively. The results of his research have been applied to a wide variety of engineering problems, including the development of orbital debris protection systems for spacecraft in low earth orbit, kinetic energy weapons, the collapse of buildings under explosive loads, insensitive munitions, and aging aircraft. At Missouri S&T, Dr. Schonberg teaches a variety of graduate and undergraduate courses in civil, mechanical, and aerospace engineering. As an academic leader, Dr. Schonberg has been department chair at two different universities and served one year as Interim Dean of the School of Engineering at Missouri S&T. In 2007 Dr. Schonberg received the Manuel T. Pacheco Award from the President's Academic Leadership Institute. This award honors an academic administrator who exemplifies outstanding academic leadership at one of the four institutions within the University of Missouri System. Also that year Dr. Schonberg received a Friedrich Wilhelm Bessel Research Award from the Humboldt Foundation in Germany, which enabled him to spend 7 months at the Fraunhofer Ernst Mach Institute in Freiburg, Germany working on advanced protection systems for satellites and developing preliminary designs for lunar habitats using in-situ materials as protection against meteoroid impacts. In 2014 he was a Visiting Professor at the University College of the Cayman Islands where he taught Engineering Law and Ethics as part of that university's new engineering program. Dr. Schonberg is a Fellow of the American Society of Civil Engineers and the American Society of Mechanical Engineers, and an Associate Fellow of the American Institute of Aeronautics and Astronautics. In 2015 he was elevated to the member rank of Distinguished Scientist in the Hypervelocity Impact Society in recognition of his many scholarly accomplishments as well as his dedication to the Society, its programs, and its student mem-

Thursday 2.30—3.15

Isa Mohammed

Calibrating and Processing Deep Sky Astronomical Images

Bio

Isa Mohammed is a Businessman and Amateur Astronomer. After winning a National Scholarship in 2002, Mr. Mohammed graduated from the University of the West Indies with a B.Sc. in Electrical and Computer Engineering in 2006. Since then he has entered his family business and is currently serving as Sales Manager.

Apart from his work in the business community, Mr Mohammed is an avid Amateur Astronomer and Astrophotographer. He is the current President of the Caribbean Institute of Astronomy (CARINA) and is heavily involved in the promotion of astronomy and science education in the Caribbean.

Thursday 3.15—4.00

James Neff

NSF-Sponsored Astronomy in the Caribbean

James Neff, Program Director

Division of Astronomical Sciences

National Science Foundation

BIO:

James Neff coordinates the grants programs within the Division of Astronomical Sciences at the National Science Foundation. From 1997 to 2016 he was a Professor of Physics & Astronomy at the College of Charleston. During that time, he was instrumental in establishing a robotic observatory in St. Thomas, USVI. He continues to collaborate scientifically with astronomers at the University of the Virgin Islands.

Friday 9.00—9.45

Sam Benigni

The Scientific Process illustrated: Examples from Astronomy

Dr. Benigni received his B.A. in Physics from Mansfield University in 1976 and Ph.D. in Physics from Kent State University in 1983. At Kent State, Dr. Benigni developed an X-Ray Diffraction facility in conjunction with the Kent State University's Liquid Crystal Institute. His X-Ray research led to the development of a novel Liquid Crystalline Phase. During this time, Dr. Benigni was also engaged in a federally funded research project where he developed modifications to Introductory Physics laboratory equipment for the physically handicapped. After receiving his doctorate degree, Dr. Benigni taught Introductory Physics, Astronomy, Conceptual Physics, Digital Electronics, and Microprocessor programming at Kent State's Trumbull branch campus. In 1985, he joined the RCA Advanced Display Research and Development Labs in Lancaster, PA. His duties there included industrial process engineering, supporting RCA's CRT and Electron Gun production facilities in the US, Italy, France, Brazil, China and Mexico. In 1989, Dr. Benigni became Manager and Senior Scientist of the Physics Group at RCA, leading several of RCA's key research projects in advanced CRT design, and Flat Panel Field Emission Display devices. He holds several patents in vacuum CRT design and processing and advanced Field Emission Display technology. In January of 2008, Dr. Benigni joined the Faculty at the Harrisburg University of Science and Technology, and is currently teaching Introductory Physics, Stellar Astronomy, and Mathematics. He is a member of the American Association of Physics Teachers and the Sigma Pi Sigma Physics Honor Society.

Friday 9.45—10.30

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May 01, 2018

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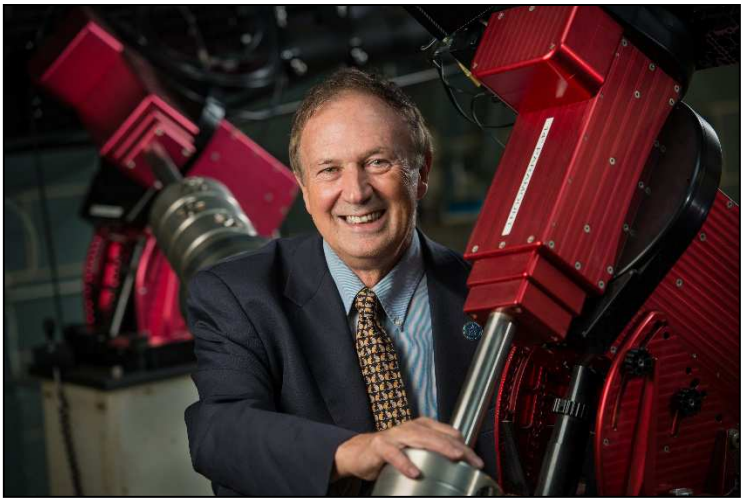

Friday 11.00—11.45

CLOSING PANEL 1.00-1.45

Ed Guinan, James Neff, Allyson Bieryla,

This conference would not have been possible without the following contributors:-

Organizing Committee

Prof Ed Guinan, USA

Dr. Shirin Haque, Trinidad

Ms. Karen Perkins, Cayman

Mr. Isa Mohammed, Trinidad

Mr. Brandon Rajkumar, Trinidad

Mr. Richard McLeod, Cayman

Ushers, Facilitators and Transport

Ruud van der Pluijm	Steve Wilkins
Robin Gandy	Phyllis Brown
Ray Jones	Faye Lippitt
Carol Jones	Erica Gordon
Peter Hughes	Tiyen Miller
Petro Kotze	Myriam Madigan

Special thanks to Dr. Shirin Haque—overall organizer

and Karen Perkins—flights and accommodation organizer. Neither of whom could attend,

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