AURELIO ASUG DE LOS REYES V

CURRICULUM VITAE

Institute of Mathematics
University of the Philippines Diliman
C.P. Garcia St., UP Campus Diliman
1101 Quezon City, Philippines

email: adlreyes@math.upd.edu.ph
joel_dlr@yahoo.com

Personal Data

Date of Birth: 21 December 1980
Place of Birth: Magarao, Camarines Sur, Philippines
Nationality: Filipino

Education

2007 - 2010: **Dr. rer. nat., Mathematics**
mit Auszeichnung bestanden (pass with distinction)
Karl-Franzens Universität Graz, Austria
(viva: 21 April 2010)

2001 - 2004: **M.S., Mathematics**
University of the Philippines Baguio, Philippines
(date graduated: 23 April 2004)

1997 - 2000: **B.S., Mathematics**
University of the Philippines Baguio, Philippines
(date graduated: 02 November 2000)

Awards and Scholarships

Feb. 2007 – Jan. 2010: **Technologiestipendien Südostasien (Doktorat),** ÖAD Scholar, Austria
June 2002 – May 2004: **Commission on Higher Education (CHED) Faculty Development Project Scholar**, Philippines
June 1997 – Nov. 2000: **Department of Science and Technology (DOST) Scholar**, Philippines

Work Experience

June 2010 - present:	**Assistant Professor 4** Institute of Mathematics College of Science, University of the Philippines Diliman
Jan. 2014 - May 2014:	**Postdoc Researcher** Renal Research Institute New York
Jan. 2013 - Dec. 2013:	**Postdoc Researcher** Department of Mathematics Konkuk University, Republic of Korea
Nov. 2011 - Oct. 2012:	**Postdoc Researcher** Biozentrum University of Basel, Switzerland
Nov. 2010 - Oct. 2011:	**Postdoc Researcher** Institute of Molecular Life Sciences University of Zurich, Switzerland
July 2005 - Oct. 2006:	**Assistant Professor 1** Department of Mathematics and Computer Science College of Science, University of the Philippines Baguio
June 2002 - June 2005:	**Instructor 1** Department of Mathematics and Computer Science College of Science, University of the Philippines Baguio

Publications:

Journal Articles

5. K. Soyoung, **A. de los Reyes V** , E. Jung, *Optimal control strategies for mitigating tuberculosis in the Philippines*, *under review*

4. P. G. B. Calderon, M. Habib, F. Kappel, **A. de los Reyes V** , *Control aspects of the human cardiovascular-respiratory system under a nonconstant workload*, Mathematical Biosciences, (2017) 289: 142-152. doi: 10.1016/j.mbs.2017.05.008

3. **A. de los Reyes V**, D. H. Fuertinger, F. Kappel, A. Meyring-Wösten, S. Thijssen, P. Kotanko, *A physiologically based model of vascular refilling during ultrafiltration in hemodialysis*, Journal of Theoretical Biology, (2016) 390: 146-155. doi: 10.1016/j.jtbi.2015.11.012

2. **A. de los Reyes V**, E. Jung, Y. Kim, *Optimal Strategies of Eradicating Glioblastoma cells after Conventional Surgery*, Journal of Royal Society Interface, (2015) 12(106), pii: 20141392. doi: 10.1098/rsif.2014.1392

1. **A. de los Reyes V**, E. Jung and F. Kappel, *Stabilizing Control for a Pulsatile Cardiovascular Mathematical Model*, Bulletin of Mathematical Biology, (2014) 76(6):1306-1332, doi: 10.1007/s11538-014-9958-2

Patent

WO application 2015184287, **A. de los Reyes V**, D.H. Fuertinger, F. Kappel, A. Meyring-Wösten, S. Thijssen, P. Kotanko, *System for analyzing vascular refill during short-pulse ultrafiltration in hemodialysis*, published 3 December 2015, assigned to Fresenius Medical Care Holdings, Inc.

Other Article

A. de los Reyes V, *Dynamics of a Cardiovascular Model Obtaining Measurable Pulsatile Pressure Output*, World Journal of Modelling and Simulation, (2015) 11(1):20-32

Conference Proceedings

3. **A. de los Reyes V**, D. H. Fuertinger, F. Kappel, A. Meyring-Wösten, S. Thijssen, P. Kotanko, *Mathematical Model Providing New Insights into Vascular Refilling During Dialysis*, J Am Soc Nephrol 25, 2014: 294A

2. H. Schättler, U. Ledzewicz, Y. Kim, **A. de los Reyes** and E. Jung, *On the Control of Cell Migration and Proliferation in Glioblastoma*, In: Proceedings of the 52nd IEEE Conference on Decision and Control, Florence, Italy, December 2013, pp. 1810-1815, doi:10.1109/CDC.2013.6760145

1. **A. de los Reyes V** and F. Kappel, *Modeling Pulsatility in the Human Cardiovascular System*, Mathematica Balkanica, New Series Vol. 24, 2010, Fasc. 3-4, 229-242

Technical Report

A. de los Reyes V and F. Kappel, *A Mathematical Cardiovascular Model with Pulsatile and Non-Pulsatile Components*, SFB-Report No. 2010-011, March 2010, Institute for Mathematics and Scientific Computing, University of Graz, Austria

PhD Thesis

A. de los Reyes V, *A Mathematical Model for the Cardiovascular System with a Measurable Pulsatile Pressure Output*, PhD Thesis, submitted March 2010, Institute for Mathematics and Scientific Computing, University of Graz, Austria

Research Interests

1. mathematical modeling of capillary refill during hemodialysis
2. mathematical modeling of human cardiovascular and respiratory system
3. optimal control theory applied to brain cancer
4. modeling dengue and TB epidemics in the Philippines

Funded Projects

1. **Control Aspects of the Cardiovascular-Respiratory System**
   Role: Project leader
   Program: Emerging Inter-Disciplinary Research (EIDR) Program Cycle 6
   Funding Source: University of the Philippines System
   Duration: 13 August 2015 – 12 August 2017
2. **Modeling Vascular Refilling during Hemodialysis**
   Role: Researcher *(via consulting agreement)*
   Funding Source: Renal Research Institute New York
   Duration: January 2014 – present
3. **Optimal Control Strategies of Regulating the "Go or Grow" Dynamics of Glioblastoma Multiforme**
   Role: Project leader
   Program: Enhanced Creative Work and Research Grants
   Funding Source: University of the Philippines System
   Duration: 01 August 2016 – 31 January 2018
4. **Modeling Dengue Transmission in the Philippines**
   Role: Project leader
   Funding Source: National Research Council of the Philippines (NRCP)
   Duration: 16 April 2016 – 15 April 2017

Presentations / Talks

International:

1. *(poster presentation)* ***Sensitivity Analysis of a Cardiovascular-Respiratory System Model under Constant Workload***, **2017 Annual Meeting of the Society for Mathematical Biology**, University of Utah, Salt Lake City, July 17-20, 2017
2. *(contributed talk - minisymposia)* ***Parameter Estimation and Uncertainty Analysis of a Vascular Refilling Model Using Hematocrit Data in Hemodialysis Treatment***, **SIAM Conference on the Life Sciences**, The Westin Boston Waterfront, Boston, Massachusetts, USA, July 11-14, 2016

3. *(poster presentation[1])* ***A Model of the Cardiovascular-Respiratory System and its Control in Response to Different Types of Ergometric Workload***, **2016 Annual Meeting of the Society for Mathematical Biology and European Conference for Mathematical and Theoretical Biology**, University of Nottingham, United Kingdom, July 11-14, 2016

4. *(contributed talk)* ***Regulation on the growth and migration of glioblastoma multiforme: Approach using optimal control theory***, **International Conference on Partial Differential Equations: General Theory and Variational Problems**, Costabella Tropical Beach Hotel, Cebu, Philippines, January 11-15, 2016

5. *(poster presentation[2])* ***Mathematical Model Providing New Insights into Vascular Refilling During Dialysis***, **American Society of Nephrology: Kidney Week 2014**, Philadelphia, PA, USA, November 11-16, 2014

6. *(contributed talk)* ***Sensitivity Analysis and Parameter Estimation of a Vascular Refilling Model***, **SMB 2014 Annual Meeting of the Society for Mathematical Biology**, Osaka, Japan, July 28-August 1, 2014

7. *(poster presentation)* ***Stabilizing Control for a Pulsatile Cardiovascular Mathematical Model***, **Asian Mathematical Conference 2013**, Busan, Korea, June 30-July 4, 2013

8. *(poster presentation)* ***Analyis of Feedback in GAL Signalling Cascade***, 8^{th} **European Conference on Mathematical and Theoretical Biology and Annual Meeting of the Society for Mathematical Biology**, Krakow, Poland , June 28-July 2, 2011

9. *(contributed talk)* ***Stabilizing Control for a Pulsatile Cardiovascular Mathematical Model*** , **SMB 2010 Annual Meeting of the Society for Mathematical Biology**, Rio de Janeiro, Brazil, July 26-29, 2010

10. *(invited speaker - MathBio session)* ***A Mathematical Model for the Cardiovascular System Combining Pulsatile and Non-Pulsatile Components***, **2009 Joint Meeting of the Korean Mathematical Society and the American Mathematical Society**, Ewha Womans University, Seoul, Korea, December 16-20, 2009

11. *(oral presentation)* ***Predicting Pulsatile Variations in Finger Arterial Pressure Using a Novel Cardiovascular System Model***, **FEPS 2009**, Ljubljana, Slovenia, November 12-15, 2009

12. *(oral presentation)* ***Modeling Pulsatility in the Human Cardiovascular System***, "SEE doctoral studies in Mathematical Sciences"- Tempus Project, Young Researchers in Mathematics Workshop, **MICOM 2009**, Ohrid, Macedonia, September 16-20, 2009

National/Local:

1. *(contributed talk)* ***Modeling the Reaction of the Cardiovascular-Respiratory System in Response to a Dynamic Workload***, **2016 Annual Convention of the Mathematical Society of the Philippines**, Bayfront Hotel, Osmea Boulevard, Cebu City, May 30-31, 2016

[1] presented by Pio Gabrielle B. Calderon
[2] presented by Doris H. Fuertinger

2. *(poster presetntation)* ***Control of the Human Cardiovascular-Respiratory System in Response to Constant and Periodic Ergometric Workload***, **2016 Annual Convention of the Mathematical Society of the Philippines**, Bayfront Hotel, Osmea Boulevard, Cebu City, May 30-31, 2016

3. *(resource speaker)* ***Researches in Applied Mathematics (Mathematical Biology/Physiology)***, **15^{th} Lecture Series in Mathematics for Secondary and Tertiary Teachers, MSP CAR, Regions 1 and 2,** , University of the Philippines Baguio, Baguio City, December 12, 2015

4. *(contributed talk)* ***Insight on Regulating the Growth and Migration of Glioblastoma Cells: An Optimal Control Theory Approach***, **2015 Annual Convention of the Mathematical Society of the Philippines**, Plaza del Norte Hotel and Convention Center, Laoag City, Ilocos Norte, May 18-19, 2015

5. *(resource speaker)* ***Mathematical Tools Applied to Cancer and Hemodialysis***, **UP Baguio lecture series**, University of the Philippines Baguio, Baguio City, October 24, 2014

6. *(resource speaker)* ***Optimal Control and Parameter Estimation: Tools in Modeling Biological Systems***, **MMOP 2014 seminar**, Nueva Vizcaya State University, Bayombong Nueva Vizcaya, October 21-23, 2014

7. *(contributed talk)* ***Optimal Control Applied to Cell Proliferation and Migration in Glioblastoma***, **KSIAM 2013 Annual Conference**, Seogwipo KAL Hotel, Jeju, Korea, November 22-24, 2013

8. *(contributed talk)* ***Control Aspects for a Pulsatile Cardiovascular Model***, **KSIAM 2013 Spring Conference**, Yonsei University, Seoul, Korea, May 24-25, 2013

9. *(poster presentation)* ***An Excursion to M.A.S.S. (Modeling, Analysis, Stability and Simulation) Towards Understanding GAL Signalling Network***, (Institute of Molecular Life Sciences) **IMLS Scientific Retreat**, Wildhaus, Toggenburg, January 13-15, 2011

10. *(resource speaker)* ***The Mathematical Pulsatile Blood Flow and its Control Mechanisms***, **Breakthroughs in Mathematics XII**, University of the Philippines Baguio, Baguio City, September 18, 2010

11. *(oral presentation)* ***Cardiovascular Dynamics during Rest and Exercise Conditions: A Modeling Approach***, **2010 Mathematical Society of the Philippines Convention**, Cebu City, Philippines, May 20-21, 2010

12. Lecture on ***Visual Calculus***, Continuing Training Program Part IV (CTP 4), University of the Philippines Baguio, April 14-15, 2005

13. Lecture on ***Basic Real Analysis***, Continuing Training Program Part III (CTP 3), Saint Mary's University, Bayombong, Nueva Vizcaya, October 20-24, 2003

Conferences / Schools / Workshops Attended

1. **Computational Physiology Modeling Week**, Simula Research Laboratory, Norway, March 20-24, 2017

2. 16th **International Conference on Dialyis**, ***Advances in Kidney Disease 2014***, Caesars Palace, Las Vegas, Nevada, January 22-24, 2014

3. **Special Highlights on Mathematical Biology**, NIMS, Daejeon, Republic of Korea, June 3-5, 2013

4. **The** 5th **International Course in Yeast Systems Biology**, Göteborg, Sweden, June 6-23, 2011

5. Mathematical Society of South-Eastern Europe (MASSEE) International Congress on Mathematics, **MICOM 2009**, Ohrid, Macedonia, September 16-20, 2009

6. Bio-Math Summer School and Workshop 2008, **Stochastic Differential Equation Models with Applications to the Insulin-Glucose System and Neuronal Modeling**, Middelfart, Denmark, August 3-16, 2008

7. Summer School and Workshop Graz 2007, **Biomedical Modeling and Cardiovascular - Respiratory Control: Theory and Practice**, Schloss Seggau, Leibnitz, Austria, July 22 - August 4, 2007

August 2017