

AGACSE 2018

Full Program

[Early Proceedings](#)

AGACSE 2018
Monday, 23rd July

The numbers in parenthesis after the titles are the corresponding page numbers in the [Early Proceedings](#).

08:00-09:00 Registration

09:00-09:30 Opening Ceremony

09:30-11:00 David **HESTENES**: *Deconstructing the Electron Clock* (15) [[Slides](#)]
(Anthony **LASENBY**)

11:00-11:30 *Coffee break*

11:30-12:30 Eckhard **HITZER**: *Three-Dimensional Quadrics in Hybrid Conformal Geometric Algebras of Higher Dimensions* (17) [[Slides](#)]
(Sebastià **XAMBÓ-DESCAMPS**)

12:00-13:30 *Lunch*

12:30-15:00 Joan **LASENBY**: Course on GA I: *Basics of Geometric Algebra* (39) [[Slides](#)]
(Carlile **LAVOR**)

15:00-15:30 *Coffee break*

16:30-17:00 Special Session in Memory of **Waldyr Alves Rodrigues, Jr**

Carlile **LAVOR**, Samuel **WAINER**, Sebastià **XAMBÓ-DESCAMPS**: *Annotations about his life track* [[Slides](#)]

Samuel **Wainer**, Sebastià **XAMBÓ-DESCAMPS**: *Fruits of a unifying philosophy* [[Slides](#)]

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Tuesday, 24th July

09:00-10:00 Eduardo **BAYRO-CORROCHANO**: *Geometric Methods for Modelling and Control in Robotics* (27) [Slides]
(Joan LASENBY)

10:00-10:30 *Coffee break*

Session Chair: LEANDRO A. FERNANDES

10:30-11:00 **Soheil SARABANDI**, Alba PEREZ-GRACIA, Federico THOMAS
Singularity-free computation of quaternions from rotation matrices in E^4 and E^3 (109) [Slides]

11:00-11:30 **Felipe FIDALGO**
Using quaternion geometric algebra for efficient rotations in the branch-and-prune algorithm to solve the discretizable molecular distance geometry problem (155) [Slides]

11:30-12:00 Rafael F. LEÃO and **Samuel A. WAINER**
Irreducible spinors and immersion of submanifolds (65) [Slides]

12:00-13:30 *Lunch*

13:30-15:00 Joan **LASENBY**: Course on GA II: *Differentiation and Linear Algebra* (39) [Slides]
(Carlile LAVOR)

15:00-15:30 *Coffee break*

Session Chair: SAMUEL WAINER

- 15:30-16:00 **Luke BURNS**
When does the continuity equation imply Maxwell's equations? (85) [[Slides](#)]
- 16:00-16:30 Stéphane BREUILS, **Vincent NOZICK**, and Laurent FUCHS
GARAMON: Geometric Algebra library generator (97) [[Slides](#)]
- 16:30-17:00 Zuleima M. VÁZQUEZ FLORES, **Eduardo BAYRO-CORROCHANO**
Quaternion fractional Fourier transform (127) [[Slides](#)]

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Wednesday, 25th July

09:00-10:00 Pablo COLAPINTO: *The Design of Cyclidic Volumes* (29) [[Slides](#)]

(Leo DORST)

10:00-10:30 *Coffee break*

Session Chair: MANUEL M. OLIVEIRA

10:30-11:00 Hugo HADFIELD, Joan LASENBY

Direct linear interpolation of geometric objects in conformal geometric algebra (131) [[Slides](#)]

11:00-11:30 Eivind R. EIDE, Joan LASENBY

A novel way of estimating rotors between conformal objects and its applications in computer vision (56) [[Slides](#)]

11:30-12:00 Hugo HADFIELD, Joan LASENBY

REFORM: Rotor estimation from object resampling and matching (141) [[Slides](#)]

12:00-13:30 *Lunch*

13:30-15:00 Leo DORST: Course on CGA I:

Tutorial: Structure Preserving Representation of Euclidean Motions through Conformal Geometric Algebra [[Slides](#)]

(Carlile LAVOR)

15:00-15:30 *Coffee break*

Session Chair: RAFAEL LEÃO

15:30-16:00 **Aleš NÁVRAT**

Conic fitting in Geometric Algebra setting (107) [[Slides](#)]

16:00-16:30 Tuan M. PHAM, Danh C. DOAN, **Eckhard HITZER**

Application of Conformal Geometric Algebra to in-plane rotated face detection by AdaBoost-based algorithm (117) [[Slides](#)]

16:30-17:00 Jesús A. MEDRANO, **Eduardo BAYRO-CORROCHANO**

Decentralized dynamic control of serial robots by screw theory in the geometric algebra framework (127)) [[Slides](#)]

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Thursday, 26th July

09:00-10:00 Dietmar **HILDENBRAND**: *Geometric Algebra Computing for a Wide Range of Computing Devices* (34) [[Slides](#)]
(Eckhard HITZER)

10:00-10:30 *Coffee break*

Session Chair: RAFAEL ALVES

10:30-11:00 **Dimitri SHIROKOV**
Calculation of elements of spin groups using method of averaging in Clifford's geometric algebra (43)) [[Slides](#)]

11:00-12:00 **David Hestenes Prize Lecture**
Srđan LAZENDIĆ, Aleksandra PIŽURICA, Hendrik DE BIE
Hypercomplex algebras for dictionary learning (57) [[Slides](#)]

12:00-13:30 *Lunch*

13:30-15:00 Leo **DORST**: Course on CGA II.
Practice I: Least Squares Fitting of Spatial Circles (40) [[Slides](#)]
Practice II: The Construction of 3D Conformal Motions (40) [[Slides](#)]
(Carlile LAVOR)

15:00-15:30 *Coffee break*

Session Chair: SARA CARDELL

15:30-16:00 **Paul LEOPARDI**

Gastineau-Hills' quasi-Clifford algebras and plug-in constructions for Hadamard matrices (67)) [[Slides](#)]

16:00-16:30 **Eduardo Ulises MOYA-SÁNCHEZ**, Sebastián SALAZAR-COLORES, Abraham SÁNCHEZ, Ulises CORTÉS

Deep learning monogenic convolutional neural network (155) [[Slides](#)]

16:30-17:00 **Gene McCLELLAN**

Using raising and lowering operators from geometric algebra for electroweak theory in particle physics (75) [[Slides](#)]

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Friday, 27th July

09:00-10:00 Derek **ABBOTT**: *The Vector Algebra War* (34) [[Slides](#)]
(Carlile LAVOR)

10:00-10:30 *Coffee break*

10:30-12:00 **Poster presentations**

12:00-13:30 *Lunch*

13:30-15:00 **Ending lecture**

Anthony **LASENBY**: *Geometric Algebra, Gravity, Electromagnetism and a 1d-up approach to the CGA* (35) [[Slides](#)]
(David HESTENES)

15:00-15:30 *Coffee break*

15:30-16:00 **WALDYR A. RODRIGUES JR. Best Poster Award**

Winner: Rafael **Alves**, José Cipriano Souza: *Conformal Geometric Algebra in molecular geometry with uncertainties.*

Finalist: Marcelo S. **Carielo**, Leandro A. F. Fernandes: *Using conformal geometric algebra to determine the structure of proteins with uncertainties.*

16:00-17:00 **Ending ceremony** (Carlile LAVOR)

Final Early Proceedings

AGACSE 2018 Proceedings

AGACSE 2021 Venue (Brno)

ICIAM 2019: [International Congress on Industrial and Applied Mathematics, July 15-19, 2019, Valencia, Spain](#) [[Slides](#)].