

**DIHEDRAL FOURIER ANALYSIS  
DATA-ANALYTIC ASPECTS AND APPLICATIONS  
SELECTED READINGS**

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PRIMARY READINGS

- (1) Overview  
[https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/viana\\_symbolic\\_reduction.PDF](https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/viana_symbolic_reduction.PDF)
- (2) The algebraic-statistical connection
  - (a) Symmetry studies for data analysis (MCAP)  
[https://blackboard.uic.edu/bbcswebdav/users/viana/web/viana\\_mcap\\_revised.pdf](https://blackboard.uic.edu/bbcswebdav/users/viana/web/viana_mcap_revised.pdf)
  - (b) Canonical decompositions and invariants for data analysis (Handbook of algebra)  
<https://blackboard.uic.edu/bbcswebdav/users/viana/Ch10-N53257.pdf>
  - (c) Computational tools (Maple)  
[https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/dna\\_data\\_calculations.mws](https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/dna_data_calculations.mws)
  - (d) Computational tools (Mathematica)  
[https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/dna\\_counts\\_r1.nb](https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/dna_counts_r1.nb)
  - (e) Computational tool for dihedral orbits (requires Mathematica Player)  
[https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/dihedral\\_orbits\\_univariate\\_r1.nbp](https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/dihedral_orbits_univariate_r1.nbp)
- (3) Dihedral Fourier analysis (CONM volume)  
[https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/ms\\_viana\\_final.pdf](https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/ms_viana_final.pdf)  
Computational tool (Maple worksheet)  
[https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/F\\_bases\\_D3\\_D\\_7.mws](https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/F_bases_D3_D_7.mws)
- (4) Dihedral Orbits and applications.  
Spectral analysis of dihedral data (AMS meeting talk at Ky.)  
[https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/viana\\_dihedral\\_designs.PDF](https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/viana_dihedral_designs.PDF)
- (5) Dihedral decompositions and dihedral Fourier in optics
  - (a) Dihedral representations I (JOSA)  
<http://tigger.uic.edu/~viana/dihedral1.pdf>
  - (b) Dihedral representations II (JMO)  
[https://blackboard.uic.edu/bbcswebdav/users/viana/web/jmo\\_VL\\_revision.PDF](https://blackboard.uic.edu/bbcswebdav/users/viana/web/jmo_VL_revision.PDF)
  - (c) Dihedral Fourier analysis in phase-space (JMO)  
[https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/viana\\_JMO\\_09.pdf](https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/viana_JMO_09.pdf)

ADDITIONAL READINGS FOR FURTHER RESEARCH

- (1) Decompositions theorems in radar polarimetry <https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/CLOUDE.pdf>
- (2) Interaction of light with polarization devices <https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/Tudor.pdf>
- (3) ABCD systems [https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/Synthesis\\_ABCD\\_system.pdf](https://blackboard.uic.edu/bbcswebdav/users/viana/FDn/Synthesis_ABCD_system.pdf)

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Readings and computational tools for the lectures presented at the Winter College on Optics and Energy, Abdus Salam International Centre for Theoretical Physics, 8 February - 19 February 2010, Trieste - Italy.

Additional references related to the workshop are listed below.

#### REFERENCES

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