

POISSON SIGMA MODEL ON THE DISK AND CYCLIC CHAINS

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SCIENTIFIC SUMMARY

It is well known in algebraic topology that structures may be induced on subcomplexes (e.g. on an embedding of the cohomology) like, e.g., induced differentials in spectral sequences or Massey products. It is also well known in physics that low-energy effective field theories may be induced by integrating out high-energy degrees of freedoms. As observed by Losev (and further developed by Mnev and Costello), the two things are actually related in terms of the BV approach to (topological) field theories.

A special case is the Poisson sigma model on the disk. It produces L_∞ -morphisms of modules (cyclic chains and differential forms) and, as an application, it associates a star product with trace to every unimodular Poisson structure.

I plan to discuss these problems, as well as related topics in the geometry of Poisson manifolds, with the MISGAM participants of the Milano group.

Curriculum vitae.*Personal information.*

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Fields of research.

Mathematical physics (topological quantum field theories; BV formalism; deformation quantization), differential geometry (symplectic and Poisson geometry; Lie algebroids and Lie groupoids), algebraic topology (knot and manifold invariants).

Education.

11/91–11/94	Milan University, Italy Ph. D. in Physics received 11/95
11/86–3/91	Milan University, Italy Degree (<i>laurea</i>) in Physics

Work experience.

6/03–present	Full Professor Mathematics Dept., Zurich University
1/98–5/03	Assistant Professor Mathematics Dept., Zurich University

Visiting and postdoc positions.

3/05–5/05	I.H.E.S. , visitor (on leave from Zurich)
9/01–12/01	Harvard University , visitor (on leave from Zurich)
6/98	Nantes University , visitor (on leave from Milan)
9/97–8/98	Milan University , Postdoc
9/95–8/97	Harvard University , Postdoc

Five selected publications in the last five years.

- (1) A. S. Cattaneo, G. Felder, L. Tomassini, From local to global deformation quantization of Poisson manifolds, *Duke Math. J.* **115**, 329–352 (2002).
- (2) A. S. Cattaneo, G. Felder, Coisotropic submanifolds in Poisson geometry and branes in the Poisson sigma model, *Lett. Math. Phys.* **69**, 157–175 (2004).
- (3) A. S. Cattaneo, D. Fiorenza, R. Longoni, On the Hochschild–Kostant–Rosenberg map for graded manifolds, *IMRN* **62**, 3899–3918 (2005).
- (4) A. S. Cattaneo, “From topological field theory to deformation quantization and reduction,” in *Proceedings of the International Congress of Mathematicians, Madrid, Spain, 2006*, (ed. M. Sanz-Solé, J. Soria,

J. L. Varona, J. Verdera), **Vol. III**, 338–365 (European Mathematical Society, 2006).

- (5) A. S. Cattaneo and G. Felder, “Relative formality theorem and quantisation of coisotropic submanifolds,” *Adv. Math.* **208**, 521–548 (2007).

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