

International scientific conference
**«Algebraic and geometric
methods of analysis»**

Book of abstracts



May 30 - June 4, 2018,
Odesa,
Ukraine

<https://www.imath.kiev.ua/~topology/conf/agma2018>

Mukai-Fourier Transform in Derived Categories to Solutions of the Field Equations: Gravitational Waves as Oscillations in the Space-Time Curvature/Spin IV

Prof. Dr. Francisco Bulnes

(Research Department of Mathematics and Engineering, TESCHA, Chalco, Mexico)

E-mail: francisco.bulnes@tesch.edu.mx.

Key words: Classical limit conjecture, derived deformed categories, Fourier-Mukai equivalence, Hecke functors, Higgs Bundel, Hamiltonian variety, Langlands correspondence, Mukai-Furier transform.

UDC:511 512 514.7 515.1 517 517.9

2010 AMS Classification: 53D37; 11R39; 14D24; 83C60; 11S15.

Starting of fact that the Mukai-Fourier transform is an equivalence of derive categories(with arbitrary decorations: +, -,b), is feasible construct a Fourier-Mukai equivalence given for

$$D_{Coh}(T^\vee A) \cong D_{Coh}(A^\vee \times \mathbf{H})$$

, where exist a distinguished deformation of the category $D_{Coh}(T^\vee A)$, which is a non-commutative deformation of $T^\vee A$, defined by a natural symplectic form, that is their quatization [1].

Then $T_o^\vee A$, results a 1-parameter deformation A^b , of the space $A^\vee \times \mathbf{H}$, to an affine bundle over A^\vee , classified by $H^1(A^\vee; \mathcal{O} \otimes \mathbf{H})$. Then the Fourier-Mukai equivalence relative to the projection $T_o^\vee A$, deforms an equivalence between the deformed categories $D_{Coh}\mathcal{D}_A - mod$, and $D_{Coh}(A^b)^b$.

Then we use the deformed version of the Mukai-Fourier transform that results on D_A- modules and we characterize to A , as a Picard variety of C ,¹, where C , is a curve. Then a Hecke functor is definid as the integral transform

$$\Phi^1 : D_{Coh}(Pic(C), \mathcal{D}) \rightarrow D_{Coh}(C \times Pic(C), \mathcal{D}),$$

to D -modules on ${}^L Bun$. But using the classical limit conjecture is had the equivalence through of the interpretation of Higgs sheaves, given in the category $D_{Coh}({}^L Higgs_0, \mathcal{O})$, which can be extended to the corresponding Langlands correspondence \mathfrak{c} , of the quantum sheaves given by $\mathfrak{c} = quant_{Bun} \circ \Phi \circ quant_C^{-1}$, where Φ , is the Fourier-Mukai transform that we want. Then we have as integral the integral transforms composition [2] $\mathfrak{c} \circ \Phi^\mu = {}^L \Phi^\mu$, which is solution to the field equation $Isom d\mathbf{h} = 0$, where \mathbf{h} , are the cotangent vector (Higgs fields).

Then by superposing of these states, considering the field corresponding ramifications(connections), we have

$$\mathcal{H} = \mathbf{H}^0(\omega_C) \oplus \mathbf{H}^0(\omega_C^{\otimes 2}) \oplus \cdots \oplus \mathbf{H}^0(\omega_C^{\otimes n}),$$

which has their re-interpretation as the curvature energy expressed through the H-states which can be written using the superposing principle to each connection $\omega_C^{\otimes j}$, (with C , a curve) that describes the corresponding dilaton (photon or gauge particle).

Likewise, in a Hamiltonian densities space [3] we have the Figure 1, considering a Hitchin base. In the case of a spinor representation the corresponding H-states can be given as spinor waves (Figure 2) which can be consigned in oscillations in the space-time-curvature/spin, to a microscopic deformation measured [4] in \mathcal{H} .

¹In a physical context (could be taken $\mathbb{M} = Pic(C)$, where \mathbb{M} , is the space-time), this represent a trace of particles in the symplectic geometry that can be characterized in a Hamiltonian manifold.

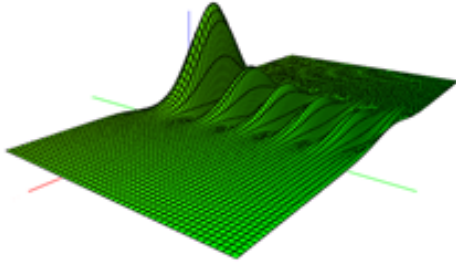


Figure 1

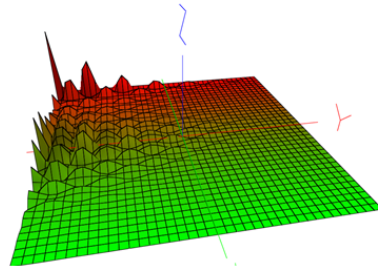


Figure 2

REFERENCES

- [1] *F. Bulnes* Extended d - Cohomology and Integral Transforms in Derived Geometry to QFT-equations Solutions using Langlands Correspondences
- [2] *F. Bulnes* Integral Geometry Methods in the Geometrical Langlands Program, SCIRP, USA, 2016.
- [3] *Francisco Bulnes (2017)*. Detection and Measurement of Quantum Gravity by a Curvature Energy Sensor: H-States of Curvature Energy, Recent Studies in Perturbation Theory, Dr. Dimo Uzunov (Ed.), InTech, DOI: 10.5772/68026.
- [4] *Bulnes, F. , Stropovskyy, Y. and Rabinovich, I. (2017)* Curvature Energy and Their Spectrum in the Spinor-Twistor Framework: Torsion as Indicum of Gravitational Waves. Journal of Modern Physics, 8, 1723–1736. doi: 10.4236/jmp.2017.810101.

Зміст

N. Aygor, H. Burhanzade <i>Secondary school students' misconceptions about linear algebra</i>	3
S. Bardyla, H. Kvasnytsia <i>Semitopological graph inverse semigroups</i>	4
B. A. Bhayo <i>On inequalities of generalized elliptic integrals</i>	5
Bodzioch M., Choiński M., Foryś U. <i>A criss-cross model of tuberculosis for heterogenous population</i>	6
Bolotov D. V. <i>Foliations with leaves of non-positive curvature and bounded total curvature on closed 3-manifolds</i>	7
E. Bonacci <i>Algebraic and geometric questions about a 6D physics</i>	9
F. Bulnes <i>Mukai-Fourier Transform in Derived Categories to Solutions of the Field Equations: Gravitational Waves as Oscillations in the Space-Time Curvature/Spin IV</i>	10
H. Burhanzade, N. Aygor <i>A study on the teaching methods in determinants</i>	12
Damla Yaman <i>Order continuity properties of lattice ordered algebras</i>	13
Denega I. <i>Problem on non-overlapping polycylindrical domains with poles on the boundary of a polydisk</i>	14
A. Dudko, V. Pivovarchik <i>Inverse three spectra problem for a Stieltjes string with the Neumann boundary conditions</i>	16
Eftekharinasab K. <i>On the existence of a global diffeomorphism between Fréchet spaces</i>	18
Glazunov N. <i>Class groups of rings with divisor theory, L-functions and moduli spaces</i>	19
O. Gok <i>b-bimorphisms</i>	21
Gül E. <i>On the second regularized trace formula for a differential operator with unbounded coefficients</i>	22
Hentosh O. Ye., Prykaratsky Ya. A. <i>The Lie-algebraic structure of the Lax-Sato integrable superanalogs for the Liouville heavenly type equations</i>	24
V. Herasymov <i>In a natural topological sense a typical linear nonhomogeneous differential equation in the ring $Z[[x]]$ has no solutions from $Z[[x]]$.</i>	26
Juraev D. A. <i>On the Cauchy problem for matrix factorizations of the Helmholtz equation</i>	27
M. E. Kansu <i>Macroscopic electromagnetism via complex quaternions</i>	29
Vladimir V. Kisil <i>An extension of Möbius–Lie geometry with conformal ensembles of cycles</i>	30
Konovenko N., Lychagin V. <i>Rational differential invariants for oriented primary visual cortex</i>	32