My Polish Physics Odyssey: The First Decade

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Definition

- **odyssey**/odisi/ **noun** (pl **eys**) a long and eventful or adventurous journey:
  - ORIGIN Late 19th cent: via Latin from Greek *Odusseia* (see **ODYSSEY**)
  The **NEW OXFORD** *Dictionary of* **ENGLISH**

Introduction

- The Beginning of the Odyssey
- University
- Beatrice Tinsley (1941-1981)
- Powers of the Vandermonde determinant and QHE
- Claude Itzykson (1938-1995)
- My uncited paper
- My latest Referee Reports
- My Polish Odyssey
- Acknowledgements

University

- Physics is really super. Doc. Gregory is a most interesting lecturer and goes frequently into the philosophical reasons for knowing anything anyway it's miles more satisfactory than learning strings of facts in an orderly manner and never knowing why anyone knows it. ... In other words doing the very opposite from the unbearable school attitude.
  Beatrice Tinsley (1958) in *My Daughter Beatrice* Edward Hill (American Physical Society, New York (1986).
- *Whoever in the pursuit of science, seeks after immediate practical utility may rest assured that he seeks in vain*
  H. von Helmholtz (1862)

Note on Beatrice Tinsley

- In 1967 Sandage took a trip to the University of Texas to give a talk about cosmology. Before he could speak, a young woman, a graduate student, stood up and told the audience that everything they were about to hear was wrong. Sandage was stunned and outraged - an outrage he was never to forget.
- The woman who announced herself into Sandage's life so unforgettably was Beatrice Tinsley.
- "I don't think it is weakness to be motivated by emotions. What else is the driving force, or inspiration to think of useful theories? Only if emontional attachment to one's own theory makes one blind to alternatives is bad"

Some Papers

- Luan Dehuai and B. G. Wybourne, *The Symmetric Group: Products, Branching Rules and Plethysms for Spin Representations, J. Phys.A:Math. Gen.*, **14**, 327-348 (1981)
- S. A. Fulling, R. C. King ,B. G. Wybourne and C. J. Cummins, *Normal Forms for Tensor Polynomials I. The Riemann Tensor Class. Quantum Grav.***9**,1151-97 (1992)
- Thomas Scharf, Jean-Yves Thibon and Brian G. Wybourne, *Expansion of the Vandermonde determinant and the quantum Hall effect J. Phys. A:Math. Gen.* **27**,4211–4219 (1994)
- *We may as well cut out the group theory. That is a subject that will never be of any use in physics*
  Sir James Hopwood Jeans

- Lidia Smentek and Brian G Wybourne, *A Relativistic Model of $f \leftrightarrow f$ transitions*, *J. Phys. B* **33**, 3647-51 (2000)
- R C King and B G Wybourne, *Multiplicity free tensor products of irreducible representations of the exceptional Lie groups* , *J. Phys. A:Math. Gen. (In press)*
- *One can measure the importance of a scientific work by the number of earlier publications rendered superfluous*
  David Hilbert
- *He is a rather good mathematician, but he will never be as good as Schottky*
  G Frobenius, in a letter recommending the appointment of David Hilbert at Gottingen

The Vandermonde determinant and the QHEffect

$$V(z_1,\ldots,z_N)=\prod_{i<j}^{N}(z_i-z_j)$$

$$\psi^m_{Laughlin}(z_1,\ldots,z_N)=\prod_{i<j}^{N}(z_i-z_j)^{2m+1}\exp\left(-\tfrac{1}{2}\textstyle\sum_{i=1}^{N}|z_i|^2\right)$$

$$\frac{\psi_{Laughlin}}{V}=V^{2m}=\sum_{\lambda\vdash n}c^{\lambda}\{\lambda\}$$

$$n=mN(N-1)$$

- The coefficients c^{λ} are signed integers and are the *same* integers that arise in the expansion of the Laughlin wavefunction as a linear combination of Slater determinants.

Claude Itzykson (1938-1995)

- Origins of the Vandermonde paper -
  Toruńx →Florence→Garching→Bayreuth →Toruń.
- Itzykson's Counting Conjecture. $N = 7$ 1111 distinct partitions,
  $N = 8$ Conjecture 5302 Calculated 5294
  $N = 9$ Conjecture 26376 Calculated 26310.
- *Exact Finite Size Study of the 2dOCP at Gamma=4 and Gamma=6* G. Tellez (Laboratoire de Physique ENS Lyon), P. J. Forrester (Department of Mathematics and Statistics, University of Melbourne)
  *J. Stat. Phys.***97**, 489 (1999)

My uncited paper

- Luan Dehuai and B. G. Wybourne, *The Symmetric Group: Products, Branching Rules and Plethysms for Spin Representations, J. Phys.A:Math. Gen.*, **14**, 327-348 (1981)
- M L Nazarov *Young's orthogonal form of irreducible projective representations of the symmetric group*,*Proc. London. Math. Soc. (2)***42**,437(1990).
- P N Hoffman and J F Humphreys, *Projective Representations of the Symmetric Groups*, Oxford (1992).
- Chap. 10 "Theorem 10.2 is due to Dehaui and Wybourne (1986). See also Salam and Wybourne (1989)."
- Chap. 11 last para."This follows by induction on n, comparing the branching rule, Theorem 10.2 ..."

Figure 2: M L Nazarov

My latest Referee Reports

- Dear Professor King
  TITLE: Multiplicity free tensor products of ...
  AUTHORS: R C King et al
  We have pleasure in informing you that your Paper has been provisionally accepted for publication in Journal of Physics A: Mathematical and General. ...If, however, you do not wish to make any further changes in response to the comments, then please let us know right away. The present version of the article will then be automatically accepted for publication.
- First Referee's Report on A/131335/PAP
  Without a detailed and convincing motivation, either mathematical or physical, I cannot recommend the publication of the paper.

- Second Referee's Report on A/131335/PAP
  Since exceptional groups has physical applications this material may be of great interest. I think that this paper can be published in its present form in Journal of Physics A: Mathematical and General

- Adjudicator's Report on A/131335/PAP
  This is a readable, solid, apparently complete, and conceivably inspirational work, quite possibly of practical utility in current gropings for imaginative constructs involving exceptional algebras in M-theory. The judgement on potential future applicability is most often suspended in subjectivity: I read the paper and got myself thinking for applications and handles on present problems I am considering, and I do not see why exposure to this type of high quality paper should be denied to the readers of this journal.

My Polish Odyssey

- Warsaw Hotel Bristol 1 May 1968 enroute to Vilnius
- Banach Centre, Warsaw 1984
- A fortuitous meeting with Jacek Karwowski, Zajączkowo 1990.
- Toruń 1990
- Return to Toruń 1991-

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