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Dear Predrag,

Many thanks for the copy of your article

"Group Theory for Gauge Theories"

(or whatever its new title may be by now) which looks quite fascinating and something after my own heart.

\* However, I was perhaps a little hurt to find that no reference was made concerning my own long-standing and systematic use of such notations! These date back some 29 years, to when I was a beginning research student trying to cope with Hodge's lectures on differential geometry. Perhaps others have also employed such notations at even earlier dates?

The most complete exposition of my notation in the published literature appears in my contribution "Applications of Negative Dimensional Tensors" in "Combinatorial Mathematics and its Applications" (ed. D.J.A. Welsh, Academic Press 1971) pp. 221-244, and I enclose some xerox pages to give you the flavour of it - and also of some calculations using this kind of notation in my paper with M.A.H. MacCallum "Twistor Theory: an Approach to the Quantisation of Fields and Space-Time" in Physics Reports 6C, no. 4 (1973) pp. 241-316. Some related notation is also given in, for example, my article "Angular Momentum: an approach to Combinatorial Space-Time" in "Quantum Theory and Beyond" (ed. E.A. Bastin, Cambridge University Press, 1969) pp. 151-180 (some xeroxes enclosed). See also "Advances in Twistor Theory" (eds. L.P. Hughston and R.S. Ward, Pitman 1979) pp. 301-323, and I seem to recall that Hughston in his book "Twistors and Particles" (Springer 1979) also employs such notations.

Of course Feynman diagrams are older than all this, but the systematic use of this sort of notation in the finite-dimensional case is something which I have found indispensable over nearly 30 years, the notation having been refined and developed a great deal. Perhaps there are some ideas here that would be of use to you. I also enclose some

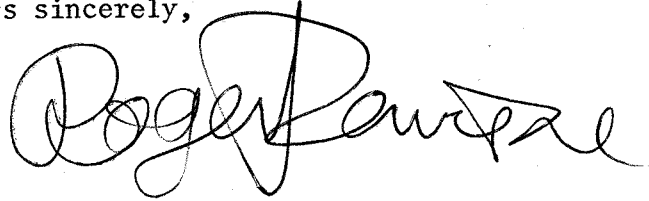
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\* I had been under the impression that John Moussouris had mentioned this to you some years back.

diagramatic "lecture notes" that I have occasionally given out to students over the past eight years.

Best wishes.

Yours sincerely,

A handwritten signature in cursive script, appearing to read "Roger Penrose". The signature is written in black ink and is positioned to the right of the typed name "Yours sincerely,".

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P.S. T.G. Murphy, of Trinity College Dublin wrote an extended monograph entitled "Tensor" using this notation, but it may not have been published.