

PALMER PHYSICAL LABORATORY  
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Dear Feza,

It was a real pleasure to receive your letter and your reactions to both Krushchev's report on culture and on the conformal group.

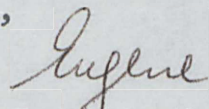
As to Krushchev's speech, I agree with most of what you said. I was, however, particularly perturbed by his exuberant praise of the "irreconcilable hatred of capitalism" and by his references to the sparks flying from the sabers of cavalrymen. If I were to speak about culture, hatred and cavalrymen would be somewhat remote from my thinking. I realize, of course, that there is a great deal of improvement in the thinking of Russian statesmen and you are quite right to emphasize this. If we believe that this improvement is largely due to the difficulties created by the United States to conquer further territories, one would be inclined to advise that these efforts not be relaxed. Under all conditions, I believe it is dangerous to be too happy with a little improvement of a very unfortunate type of thinking as long as the thinking remains unfortunate.

Now let me come to the conformal group. My first question concerns the position operator which you propose. This is, incidentally, the first time that I see a set of position operators which truly commute. I cannot check Bacry's contention that his operators commute, but this is beside the point. What bothers me about all such operators is that I do not see very clearly what their physical interpretation is. Suppose we had a wave function for which all these operators have definite values -- let us say, all have the value zero. Then, the probability that the particle be at time  $t=1$  at any position whatever is zero. This is clearly not the right interpretation, but I do not know what the right interpretation is. In other words, it seems to me that, according to the customary interpretation, the wave functions which belong to the various positions at  $t=0$  should already form a complete set and should not be orthogonal to the wave functions for any other  $t$ . I can understand what a relativistically invariant localized state is, but the interpretation of the operators is not clear to me.

I am more enthusiastic about your conformally invariant field theory. Kastrup talked to me about similar matters, but he did not come to any very clear conclusion, and I had the impression at the end of his sojourn here that he no longer believed in the usefulness of the conformal group. I will study what you have written a bit more and will return to it.

We do hope we can see you and Suha soon.

Sincerely,



Eugene P. Wigner

**Boğaziçi Üniversitesi**

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**Feza Gürsey Arşivi**



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