Obukhov Replies: The Comment [1] contains two points which both appear to be misleading.

Let me start with the second point: The *spin operator* is indeed not equal to the spin matrix $\Sigma = i\gamma \times \gamma/2$. This is correct. However, Nicolaevici is wrong in claiming that the opposite was ever stated in my Letter [2]. Defined in the footnote [12] above Eq. (9) of [2], Σ is treated merely as the *spin matrix* throughout the Letter [2]. It was never identified with the spin operator, contrary to the claim of [1]. The same applies to the earlier papers [3], where the nonrelativistic Hamiltonians also contain "spin terms" with Σ, but the latter is of course different from the spin operator.

Another point of [1] concerns the parity. To begin with, let us recall that parity transformation in the Dirac theory is not just a reflection of spatial coordinate $\vec{x} \rightarrow -\vec{x}$. It is described by the unitary operator P which commutes with the free Dirac Hamiltonian (see [4], e.g.). Using its explicit form, one can check that indeed $UPU^\dagger \neq P$ for the Foldy-Wouthuysen (FW) operator U of [2]. Thus, it is correct that U is not parity preserving. However, is there a problem? Of course not, if we are consistent. Namely, suppose a Hamiltonian H is parity invariant in the Dirac representation, $[P, H] = 0$. Then, the transformed Hamiltonian $H' = UHU^\dagger$ in the FW representation is *also* parity invariant, $[P', H'] = 0$, provided we use the correct transformed parity operator $P' = UPU^\dagger$. We do this by the same token as for the spin operator [see Eq. (2) of [1]]. All operators are covariantly transformed under the change of representation.

By comparing the results of [2] with the original FW transformation, Nicolaevici [1] thus confirms our conclusion about the intrinsic ambiguity of the FW representation, nothing more.

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Received 25 April 2002; published 23 July 2002
DOI: 10.1103/PhysRevLett.89.068903
PACS numbers: 04.20.Cv, 03.65.Ta, 04.80.Cc

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