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Enigmas of the $Sp(h)in(x)$

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Beyond the well-known epistemological and foundational problems of quantum theory (measurement theory, entanglement, classical limit, etc.), there are others conceptual questions which have been somewhat neglected in the past decades. I will discuss six of these open questions, all connected with the notion of spin: the riddle of the position operator (or Dirac vs Wigner); the puzzle of the intrinsic magnetic moment; the spin-forces connection; the spin-statistics connection; the spin-charges connection; the non-renormalization of spin.

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