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## Analysis of the $b_1$ meson decay in local tensor bilinear representation

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We explore the validity of vector meson dominance in the radiative decay of the  $b_1(1235)$  meson. In order to explain the violation of the vector meson dominance hypothesis in this decay process, we investigate a model where the  $b_1$  meson strongly couples with the local current in tensor bilinear representation. The tensor representation is investigated in the framework of the operator product expansion (OPE) and we found a low energy decay process that does not follow the usual vector meson dominance hypothesis. In the OPE of the tensor current, four-quark operators are leading quark contribution and their value can be inferred from the QCD vacuum structure. The  $\omega$ -like intermediate meson state of quantum numbers  $I^G(J^{PC}) = 0^-(1^{--})$  is found to have a nontrivial role in the decay process of the  $b_1$  meson. The spectral structure of the  $\omega$ -like state is found to be close to a  $\pi$ - $\rho$  hybrid state, which provides a mechanism that evades the usual vector meson dominance hypothesis. Precise measurements of various decay channels of the  $b_1$  meson are, therefore, required to unravel the internal structure of axial vector mesons.

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