- **Mass spectrum of heavy quarkonium hybrids**
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  We have extended the calculation of the correlation functions of heavy quarkonium hybrid operators with various $J^{\mathbf{PC}}$ quantum numbers to include QCD condensates up to dimension six. In contrast to previous analyses which were unable to optimize the QCD sum-rules for certain $J^{\mathbf{PC}}$, recent work has shown that inclusion of dimension six condensates stabilizes the hybrid sum rules and permits reliable mass predictions. In this work we have investigated the effects of the dimension six condensates on remaining channels. After performing the QCD sum rule analysis, we update the mass spectrum of charmonium and bottomonium hybrid states with exotic and non-exotic quantum numbers. We identify that the negative-parity states with $J^{\mathbf{PC}} = (0, 1, 2)^{-+}, 1^{--}$ form the lightest hybrid supermultiplet while the other four positive-parity states with $J^{\mathbf{PC}} = 0^{+-}, 1^{+-}, 1^{++}, 0^{++}$ belong to a heavier hybrid supermultiplet, confirming the supermultiplet structure found in other approaches. The hybrid with $J^{\mathbf{PC}} = 0^{--}$ has a much higher mass in our spectrum which may suggest a different excitation of the gluonic field from the other channels. In agreement with previous results, we find that the $J^{\mathbf{PC}} = 1^{++}$ charmonium hybrid is substantially heavier than the $X(3872)$, which seems to preclude a pure charmonium hybrid interpretation for this state.