

Class of complex Yang-Mills fields

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We give a procedure by means of which a class of solutions of the $SU(2)$ Yang-Mills equations in Minkowski space-time is obtained. The potentials and field strengths generated by our method are complex. However, the corresponding energy-momentum tensor is a real quantity. We obtain a subset of $SU(2)$ solutions starting from solutions of the wave equation. These $SU(2)$ solutions have vanishing energy-momentum tensors, even though they are not obtained by a gauge transformation from the vacuum. We exhibit also a simple nonsingular time-dependent $SU(2)$ solution and discuss a Liénard-Wiechert type of solution in $SU(2)$. © 1978 The American Physical Society.