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Progress in the Gauge Theory with Spontaneously Broken $N=2$ Supersymmetry

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We summarize the recent progress in the gauge theory with spontaneously broken $N=2$ supersymmetry. We consider the low energy processes described by the $N=2$ supercurrent on its partially (to $N=1$) and spontaneously broken tree vacuum and the attendant Nambu-Goldstone fermion (NGF), which the presence of the electric and magnetic Fayet-Iliopoulos (FI) terms is responsible for. We show suppression of amplitudes decaying into the NGF as its momentum becomes small.

By invoking mechanism which simulates that of the BCS/NJL in superconductivity/chiral symmetry, we consider the possibility that the $N=1$ supersymmetry is further broken to $N=0$.

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