Numerical results of two-dimensional $\mathcal{N}=(2,2)$ super Yang-Mills theory

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We report numerical results of two-dimensional super Yang-Mills theory. We use a model proposed by Suzuki-Taniguchi. The model has no explicit supersymmetry at finite lattice spacing, but according to their argument, $\mathcal{N}=(2,2)$ supersymmetry will be recovered in the continuum limit. The action consists of 4-dimensional plaquette action together with one Wilson Dirac fermion, which is dimensionally reduced to 2 dimensions, and a scalar mass term with one fine tuned parameter. We observe some Ward-Takahashi identities for 1pt function and 2pt function. In most cases it is difficult to observe the recovery of the SUSY; 2pt functions suffer from large noise and turn out to be hard to observe. We find at least one good WTi for 1pt function.