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Wilson loops and the generalized quark-antiquark potential in ABJM theory

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We construct a generalized cusped Wilson loop operator in N=6 Super Chern-Simons theories which is locally invariant under half of the supercharges. It depends on two parameters and interpolates smoothly between the 1/2 BPS line or circle and a pair of antiparallel lines, representing a natural generalization of the quark-antiquark potential in ABJ(M) theories. Moreover we construct two new families of BPS Wilson loops in ABJM theory which live respectively on three dimensional euclidean space-time and on the two dimensional sphere. Our results open the possibility to explore the connection between localization and all-loop Bethe Ansatz in ABJM theory and give a possible way to find an interpolating function between weak and strong coupling, essential to solve the TBA.

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