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Heavy Quark States with Relativistic Confinement RICHARD SIL-BAR, TERRENCE GOLDMAN, Los Alamos National Laboratory — Constituent quark models of hadronic states are usually studied non-relativistically, although with various sophistications such as relativized kinetic energy, highly structured interaction potentials including harmonic confinement, and recently, components motivated by field theory [1]. Confinement is a critical element, but it is a linear confining potential that is found by lattice work in fully relativistic, field theory using Dirac bispinors. Recalling an early observation [2] that non-relativistic reduction of a linear potential approach produces an effective harmonic confining potential, we have reconsidered relativistic modeling with a view towards simplifying the potentials and interactions assumed. We report on progress, in the heavy quark sector, in determining the structure and nature of the potentials required to match the experimentally determined ground states, as well as the radial and orbital excitation spectra.

[1] Di Qing, Xiang-Song Chen and Fan Wang, Phys. Rev. D 58, 114032 (1998).

[2] T. Goldman and S. Yankielowicz, Phys. Rev. D 12, 2910 (1975).

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