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String-localized Quantization: Retrospect and Prospect

The theory of string-localized quantum fields has emerged in recent years as an alternative to the BRST approach to QFT. One parametrizes quantum fields by spacetime variables and an extra spacelike or lightlike ray: the "string". For observables, gauge invariance is replaced by string independence as the guiding principle. All fields live on positive-definite Hilbert spaces; ghosts are exorcised, although certain "escort fields" take their place. Some advantages: improved UV behaviour for spin one or greater; admissibility of Wigner's infinite-helicity particles; helicity decoupling in massless limits; and an explanation for electroweak chirality. An ongoing challenge is to develop perturbative renormalization for string-local fields.