

Prophetic constructions of branching and related processes

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A collection of well-known population models (branching processes, branching Markov processes, branching processes in random environments, etc.) is constructed in a manner that associates with each individual in the population a characteristic called a level. If the levels are known to an observer, then a great deal is known about the future behavior of individuals (e.g., the exact time of death). If the levels are not known, then the models evolve as the observer would expect from their classical descriptions. The constructions enable straight forward proofs of a variety of known and not-so-well-known results including limit theorems, conditioning arguments, and derivation of properties of genealogies.