

# Modeling evolving affiliation networks via random intersection graph processes

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Verices of an affiliation network (cluster network) are identified with subsets of a given ground set: two subsets are declared adjacent whenever they intersect. For example, in a collaboration network authors are identified with the papers they have published and two authors are declared adjacent whenever they have coauthored a paper. Similarly, in the actor network two actors are declared adjacent whenever they have acted in the same movie. We are interested in affiliation networks evolving in time: as time goes on new actors enter the network, new films are produced and new adjacency relations established. Our first model uses the fitness: an actor  $v$  receives weight  $x(v)$  and film  $w$  receives weight  $y(w)$  before entering network. Given  $x(v)$  and  $y(w)$  actor  $v$  chooses film  $w$  with probability proportional to the product  $x(v) y(w)$ . Our second model uses a preferred attachment rule. We show the asymptotic degree distribution and evaluate clustering and assortativity coefficients.