

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**Self-organization of collaboration networks** JOSE J. RAMASCO, Physics Department, Emory University , SERGEI N. DOROGOVTSSEV, Departamento de Fisica, Universidade de Aveiro, Portugal, ROMUALDO PASTOR-SATORRAS, Departament de Fisica i Enginyeria Nuclear, Universitat Politècnica de Catalunya, Spain — We study collaboration networks in terms of evolving, self-organizing bipartite graph models. We propose a model of a growing network, which combines preferential edge attachment with the bipartite structure, generic for collaboration networks. The model depends exclusively on basic properties of the network, such as the total number of collaborators and acts of collaboration, the mean size of collaborations, etc. The simplest model defined within this framework already allows us to describe many of the main topological characteristics (degree distribution, clustering coefficient, etc.) of one-mode projections of several real collaboration networks, without parameter fitting. We explain the observed dependence of the local clustering on degree and the degree–degree correlations in terms of the “aging” of collaborators and their physical impossibility to participate in an unlimited number of collaborations.

Jose J. Ramasco  
Physics Department, Emory University

Date submitted: 27 Nov 2004

Electronic form version 1.4