



Examples of Markovian and Queuing Models

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“Performance analysis of the IEEE 802.11 distributed coordination function,” Giuseppe Bianchi, *IEEE Journal on Selected Areas in Communications*

http:

[//ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=840210](http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=840210)

- One of most cited papers in ICT ever (more than 7300 citations in Google Scholar)
- Made his author (an Italian) one of the best known scientists in the area
- Some researcher's simply tell that they work “on Bianchi's model”
- Influenced the subsequent evolution of the 802.11 standard



A series of three papers (there are many more) in increasing modeling sophistication that model the behavior of transport layers, ARQ, dynamic window protocols, with specific modeling of TCP. The technique used is based on $-/G/\infty$ queuing networks.



- “Modeling window based congestion control protocols with many flows,” Renato Lo Cigno, Mario Gerla, *Performance evaluation*
<http://www.sciencedirect.com/science/article/pii/S0166531699000292>
- “Closed queueing network models of interacting long-lived TCP flows,” Michele Garetto, Renato Lo Cigno, Michela Meo, Marco Ajmone-Marsan *IEEE/ACM Transactions on Networking*
<http://dl.acm.org/citation.cfm?id=987240>
- “Modeling short-lived TCP connections with open multiclass queueing networks,” Michele Garetto, Renato Lo Cigno, Michela Meo, Marco Ajmone-Marsan, *Computer Networks*
<http://www.sciencedirect.com/science/article/pii/S1389128603003499>