

Abstract Submitted  
for the MAR16 Meeting of  
The American Physical Society

**A simple model for research interest evolution patterns** TAO JIA, Southwest University, China, DASHUN WANG, Pennsylvania State University, BOLESŁAW SZYMANSKI, Rensselaer Polytechnic Institute — Sir Isaac Newton supposedly remarked that in his scientific career he was like “. . . a boy playing on the sea-shore . . . finding a smoother pebble or a prettier shell than ordinary”. His remarkable modesty and famous understatement motivate us to seek regularities in how scientists shift their research focus as the career develops. Indeed, despite intensive investigations on how microscopic factors, such as incentives and risks, would influence a scientist’s choice of research agenda, little is known on the macroscopic patterns in the research interest change undertaken by individual scientists throughout their careers. Here we make use of over 14,000 authors’ publication records in physics. By quantifying statistical characteristics in the interest evolution, we model scientific research as a random walk, which reproduces patterns in individuals careers observed empirically. Despite myriad of factors that shape and influence individual choices of research subjects, we identified regularities in this dynamical process that are well captured by a simple statistical model. The results advance our understanding of scientists’ behaviors during their careers and open up avenues for future studies in the science of science.

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Date submitted: 19 Oct 2015

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