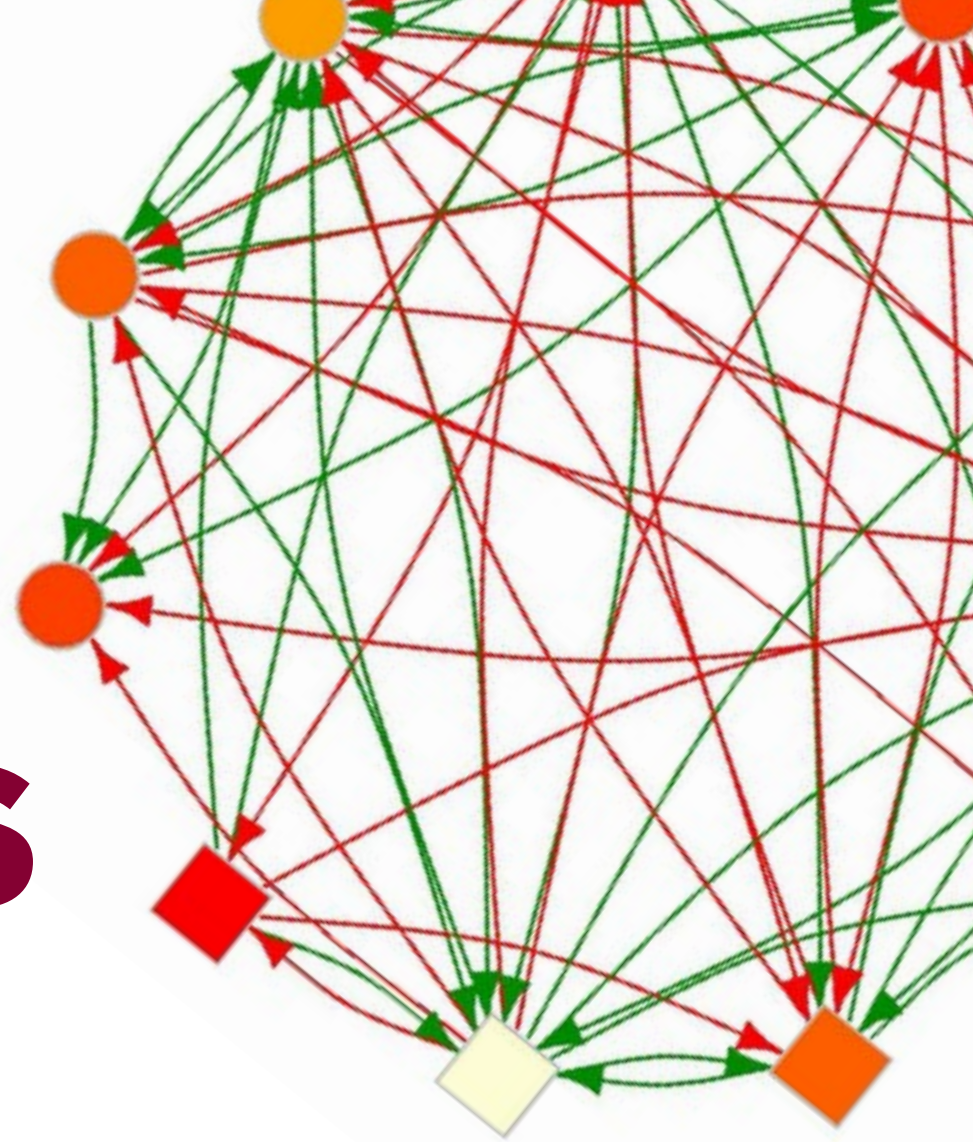




AMERICAN
UNIVERSITY OF BEIRUT
CENTER FOR ADVANCED
MATHEMATICAL SCIENCES



NETWORKS AND CONFLICT

COURSE OUTLINE

INTRODUCTION TO CONFLICTS: Mathematical analogies between the statistical analysis of human “social quakes” and earthquakes/Econophysics, income distributions and Gini index as a measure of inequality.

FORMATION OF ALLIANCE AND BLOCKS: Cultural, religious, economical, historical and political propensities amongst nodes (ethnic groups, regions, countries, etc.)/Optimization algorithm to decrease social frustration in networks/Breakup of Yugoslavia/Three-body interactions in social systems.

FRIENDSHIP AND ENMITY: Competition in directed weighted networks/ Similar cultural traits and homophilic attraction effects/Models of dissemination of culture.

HOMICIDES IN MEXICO: Correlating deaths per capita in municipalities /Time evolution of the network of clashes amongst rival criminal gangs in México’s narco-war.

FEBRUARY 21, 28 AND MARCH 2, 2023 | 2:00 PM (BEIRUT TIME)

COLLEGE HALL, AUDITORIUM B1 AND ZOOM



MARCELO DEL CASTILLO MUSSOT

Physics Institute of the National Autonomous University of Mexico (UNAM)

Marcelo del Castillo Mussot is a physicist currently working as a professor in the Department of Complex Systems of the Physics Institute of the National Autonomous University of Mexico (UNAM). He obtained his master’s degree from the Center for Research and Advanced Studies (CINVESTAV) of the National Polytechnic Institute in Mexico. He earned his Ph.D. from the University of California, San Diego campus (UCSD) and has published more than 100 articles in journals with international circulation on solid state physics, sociophysics, econophysics, sociology of science, among other topics. He has also published four popular science books. His latest research articles deal with interdisciplinary topics such as individual and household income of poor, rich and middle classes in Mexico, correlations of international remittances to number of migrants, move-by-move dynamics of the advantage in chess matches, three-body interactions in sociophysics and their role in coalition forming, continuous opinion model in small-world directed networks, wealth of the world’s richest publicly traded companies per industry and per employee, COVID-19 cases at countries and territories at onset days as function of external tourism inflows, world per capita gross domestic product measured nominally and across countries with purchasing power parity, burst behavior in human violent conflicts (“social quakes” as earth quakes), etc.

