Antoni Rangachev obtained his BSc from Massachusetts Institute of Technology (MIT), and his PhD from Northeastern University (NEU) in 2017 under the direction of Terence Gaffney and Steven Kleiman. He is a **Peter Beron fellow** at the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences and a **scientific advisor** at the International Center for Mathematical Sciences – Sofia. From 2017 to 2021, Antoni Rangachev was a **Dickson Instructor** at the Department of Mathematics at the University of Chicago.

Rangachev's research is in algebraic geometry, singularity theory, and commutative algebra. He introduced *the local volume of a relatively very ample invertible* sheaf as an invariant in singularity theory. He used the local volume to obtain numerical control for Whitney--Thom (differential) equisingularity for families of complex analytic sets and functions with isolated singularities. Rangachev introduced a notion of *generalized smoothability* by considering the class of singularities that admit deformations to *deficient conormal* (dc) singularities for which the local volume associated with the conormal scheme vanishes. This class contains all smoothable singularities, Cohen-Macaulay codimension 2 singularities, Gorenstein codimension 3 singularities, and determinantal singularities. In commutative algebra, Rangachev obtained a general form of Rees' celebrated valuation theorem.

Antoni Rangachev was an invited speaker at research seminars and conferences in Chicago, Boston, Princeton, Paris, Marseille, Moscow, Rio de Janeiro, Sao Paulo, Tokyo, Vienna, Sofia, etc. He was a visiting fellow at the Institut Mathematique de Jissue (IMJ-PRG) and the University of Paris (Diderot), Instituto de Matemática Pura e Aplicada (IMPA) in Rio de Janeiro, the University of Vienna, and Steklov Mathematical Institute. Rangachev was the organizer of University of Chicago seminar in algebraic geometry and of an international conference in metric geometry of singularities held in Paris in June 2021.

Awards and Fellowships:

• Peter Beron Fellowship, Bulgarian Academy of Sciences, 2021-

• The 2017 recipient of the NEU Dean of College of Science award for Excellence in Research for "outstanding research in the mathematics of singularities".

• Principal investigator, University of Chicago-IMJ (PRG) grant, ``*Metric Geometry and Singularity Theory*", 2020-2021.

• Principal investigator, University of Chicago FACCTS grant, ``*Conormal and Arc Spaces in the Deformation Theory of Singularities*," 2018–2021.

• Principal investigator, Office of the Provost Global Faculty Grant, ``University of Chicago—IMPA collaboration in algebraic geometry," 2019—2021.

• Ling Ma Fellowship, Department of Mathematics, NEU, 2014.

• Clay Mathematics Institute Fellowship, Clay Summer School on Resolution of Singularities, 2012.

• Undergraduate Research Opportunities Fellowships, MIT, 2008–2011.