NIKOLAI GORELENKOV

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Dr. Nikolai Gorelenkov is a Research Physicist at the Princeton Plasma Physics Laboratory. He graduated from Moscow State University with a degree in the physics department in 1988. He was within the top 10% of the Moscow State University graduates.

After graduation, Nikolai Gorelenkov was hired by Troitsk branch of the Kurchatov Institute (now TRINITI - Troitsk Institute for Innovative and Fusion Research). From 1990 to 1993, Dr. Gorelenkov attended the postgraduate program at the Russian Scientific Center in the Kurchatov Institute for PhD candidates. Upon completion of this program and five years of research at TRINITI, Nikolai Gorelenkov defended his thesis for the title of Candidate of the Physics and Mathematics Sciences (Russian equivalent of PhD). Academician B. B. Kadomtsev chaired his thesis committee and his thesis advisor was Dr. S.V. Putvinski. The title of his thesis was "Neoclassical Alpha Particle Distribution Function and Instabilities of Alfven Eigenmodes in Tokamak Plasmas".

Shortly after this in 1993 Dr. Gorelenkov became a Visiting Research Scholar at PPPL under US/Russia exchange program. Since 1999, Dr. Gorelenkov has been a Research Physicist at PPPL. He has published 73 papers in referred journals, with 28 papers as a first author. Dr. Gorelenkov has given invited talks at many international and national conferences, such as IAEA, APS and Sherwood plasma theory meetings. He is an experienced computer user, skilled in different operating systems and environments, including MS-Windows, UNIX, and X Windows. He has written several numerical codes in FORTRAN and C.

Dr. Gorelenkov is a world-renowned expert in the physics of fast particle dynamics in plasmas. He has investigated fast particle dynamics in tokamak plasmas, numerically and analytically, including such effects as finite orbit width on their velocity space distributions. His theory of Ion Cyclotron Emission (ICE) from tokamaks has been instrumental in understanding many experimental observations on TFTR, NSTX and other machines. Recently, based on new measurements of ICE-like events in NSTX, he has developed a new theory describing Compressional Alfven Eigenmodes in low aspect ratio plasmas, which has been used successfully to understand observations of these modes in NSTX. Since 1998, he has been actively involved in the modeling and analysis of experiments on different tokamaks worldwide, such as JET in the UK, JT60-U in Japan, and DIII-D in the U.S. He has written the high-n stability code HINST and the modified NOVA-K code, which were successfully applied to understand conditions of excitation of different branches of Alfven mode and sawteeth in a range of tokamak devices. The HINST and NOVA codes have been applied by him to study burning plasmas in order to predict the stability Alfven modes in next step burning experiments including ITER and FIRE.