Some Problems of Attitude Dynamics and Control of a Rigid Body

to the 90th Birthday of Professor V. I. Zubov

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Abstract: In the present paper, Vladimir Zubov's results on the problems of analysis and control of rotation motion of a rigid body are surveyed together with their developments and extensions.

Keywords: *rigid body; dynamics; Lyapunov function; asymptotic stability; attitude stabilization.*

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1 Introduction

The outstanding Russian mathematician and mechanical engineer Vladimir Ivanovich Zubov (1930–2000) made an invaluable contribution to the development of Stability Theory and Control Theory.

V. I. Zubov was born on April 14, 1930 in Kashira town, Moscow region, Russia. In 1945, he finished secondary school. At the age of 14, Vladimir was wounded by a hand grenade exploded accidentally and soon failed eyesight. In 1949, he finished the Leningrad special school for blind and visually impaired children and entered the Mathematical and Mechanical Faculty of the Leningrad State University. In 1953, after graduating with honors, he joined the University faculty and since then his career was inseparably associated with the Leningrad (now, Saint Petersburg) State University.

In 1955, V. I. Zubov defended his PhD thesis "Boundaries of the Asymptotic Stability Domain" in which he proved the theorem on the asymptotic stability domain. This result is now known as *Zubov's theorem.*

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