NASTAVNO-NAUČNOM VEĆU MAŠINSKOG FAKULTETA U NIŠU

Predmet: Odgovor Komisije za izbor jednog docenta za užu naučnu oblast Teorijska i primenjena mehanika (u daljem tekstu Komisija), na dopis br. 612-68-5/2010, od 22.06. 2010. g.

Na Izveštaj Komisije uputila je primedbe sa predlogom za dopunu i izmenu istog u tri (3) tačke, dr Katica Hedrih, redovni profesor u penziji Mašinskog fakulteta Univerziteta u Nišu.

Odgovori Komisije na upućene predloge:

Kako je, na osnovu Odluke Nastavno-naučnog veća Mašinskog fakulteta u Nišu, Komisija imala zadatak da napiše predmetni Izveštaj, saglasno Zakonu o visokom obrazovanju, Statutu Univerziteta u Nišu, Statutu Mašinskog fakulteta u Nišu i pratećim aktima Univerziteta i Fakulteta, koji se odnose na ovu problematiku, to i odgovor Komisije, na u dopisu navedene primedbe i date predloge za dopunu i izmenu istog, mora takođe biti u potpunosti saglasan sa ovim dokumetima i uobičajenom univerzitetskom praksom. Imajući sve ovo u vidu, Komisija dostavlja Veću sledeće odgovore na postavljene primedbe i date predloge za dopunu i izmenu istog dr Katice Hedrih, redovnog profesora u penziji Mašinskog fakulteta Univerziteta u Nišu.

1. Komisija je pisala Izveštaj prema konkursnoj dokumentaciji koju je kandidat priložio. U konkursnoj dokumentaciji nije bila priložena pomenuta referenca iz prigovora pa je to razlog što nije navedena u Izveštaju.

2. Komisija smatra, da nema potrebe vršiti dopunu Izveštaja, po predlogu 2* podnosioca, jer na osnovu priložene konkursne dokumentacije (separati radova) tvrdnja podnosioca prigovora nije tačna. U prilogu je data prva strana separata pomenutog rada kao dokaz da je komisija ispravno ocenila ovaj rad.

3. Komisija smatra da podaci kojim podnosilac primedbi zahteva dopunu Izveštaja nisu potrebni, jer se radi o prvom izboru kandidata u nastavničko zvanje. (Videti " *Bliži kriterijumi za izbor u zvanje nastavnika*" koje je doneo Senat Univerziteta u Nišu na sednici održanoj 31. 03. 2008. god.).

U Nišu, Beogradu i Novom Sadu, juna 2010. godine.

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МАШИНСКИ ФАКУЛТЕТ У НИШУ
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DYNAMIKA STROJŮ 2000

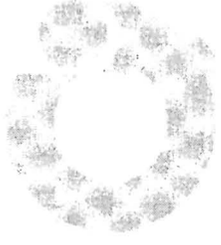
DYNAMICS of MACHINES 2000

NATIONAL COLLOQUIUM WITH
INTERNATIONAL PARTICIPATION

FEBRUARY 8 - 9, 2000

PRAGUE, CZECH REPUBLIC

PROCEEDINGS



Institute of Thermomechanics,
Academy of Sciences of the Czech Republic

and
Czech Committee
of the EUROMECH Society

Czech Committee of the European Mechanics Society
Colloquium DYNAMICS OF MACHINES 2000
Institute of Thermomechanics ASCR, Prague, February 8 - 9, 2000

NONLINEAR DYNAMICS OF A GYRO-DISK-ROTOR AND STRUCTURAL DEPENDENCE OF A PHASE PORTRAIT ON THE INITIAL CONDITIONS

Katica (Stevanović) HEDRIH[1], Goran JANEVSKI[2]

Abstract: *By using examples of the rotor system which rotates about two axes with section or without section, we applied the vectorial method of the kinetic parameters analysis of the rotors with many discs which is done by [13], [15], [16] and [17]. Expressions for the corresponding linear momentum and angular momentum, as well as their derivatives in time are used [8], [9], [10] and [13]. By these expressions vectorial equations of the gyro rotor system dynamics are derived [...], [16] , as well as the expression for the kinetic pressures on the gyro rotor system bearings.*

By using vectorial equations [15], [16] we composed two scalar differential equations of the heavy rotor system nonlinear dynamic for the case that disc is skewly excentricaly positioned on the own polhode shaft (gyro-disk-rotor). For the case when one rotation about axis is controlled by constant angular velocity the nonlinear dynamics of the rotation about other axis is studied. Nonlinear gyro-disc-rotor system dynamics are presented by phase portrait in the phase plane, with trigger of the singularities, as well as with homoclinic orbits and homoclinic points of the nonstable type saddle. For the case of gyro-disc-rotor system dynamics under the action of the perturbe couple the sensitive dependence in the vicinity of the equilibrium nonstable position which corresponds to homoclinic point of the type nonstable saddle, the possibility of the chaotic character behavior is pointed out.

For the selected example heavy gyro-disk-rotor of the solutions rotate equations, the analysis of the static and dynamic equilibrium positions, as well as the structural stability of the phase portrait are presented in this lecture. By using integral equations of the phase trajectories family, as well as phase portrait, vector rotators as functions of the generalized angle coordinate of the component rotations are analytically determined, and graphically presented. Expressions of the kinetic pressures of shaft bearing are determined.

The analogy between motions of heavy material point: on the circle in vertical plane which rotates around vertical axis in the plane (see Ref. [1]) and corresponding motions case of the heavy rotor, as well as of the gyro-disc-rotor which rotates around two axes is pointed out.

Key words: *gyro-disc-rotor, nonlinear dynamics, phase portrait, dynamical equilibrium positions, homoclinic orbits.*

1. Introduction

Dynamics of discs on the one, or more, shaft is a classical engineering problem. This problem attracts attention of many researchers and permanently takes place in world scientific and engineering professional literature (see Ref. [6], [2], [3]). Some of these problems are classical and can be found in university text books of mechanics (see Ref. [3]). As we can see,

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