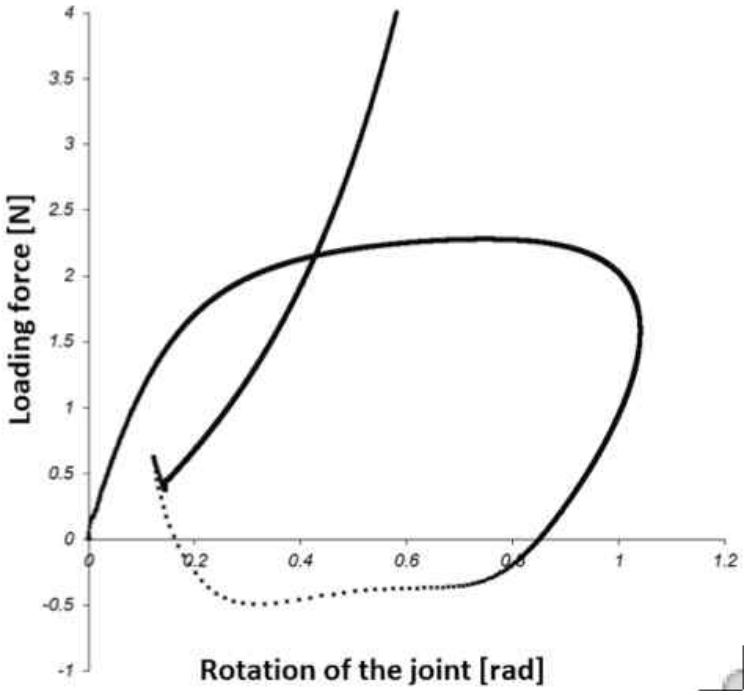

Postcritical behavior of an imperfect L-shaped Roorda frame

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Selected Publications (books), See:
http://www.amazon.com/s?ie=UTF8&page=1&rh=n%3A283155%2Cp_27%3AArdeshir%20Guran

Theory of Elasticity for Scientists and Engineers by Teodor M. Atanackovic and Ardeshir Guran (Jul 1, 2000)

ABSTRACT: This book is intended to be an introduction to elasticity theory. It is as- sumed that the student, before reading this book, has had courses in me- chanics (statics, dynamics) and strength of materials (mechanics of mate- rials). It is written at a level for undergraduate and beginning graduate engineering students in mechanical, civil, or aerospace engineering. As a background in mathematics, readers are expected to have had courses in ad- vanced calculus, linear algebra, and differential equations. Our experience in teaching elasticity theory to engineering students leads us to believe that the course must be problem-solving oriented. We believe that formulation and solution of the problems is at the heart of elasticity theory. 1 Of course orientation to problem-solving philosophy does not exclude the need to study fundamentals. By fundamentals we mean both mechanical concepts such as stress, deformation and strain, compatibility conditions, constitu- tive relations, energy of deformation, and mathematical methods, such as partial differential equations, complex variable and variational methods, and numerical techniques. We are aware of many excellent books on elasticity, some of which are listed in the References. If we are to state what differentiates our book from other similar texts we could, besides the already stated problem-solving ori- entation, list the following: study of deformations that are not necessarily small, selection of problems that we treat, and the use of Cartesian tensors only.

Advances in Stability, Vibration and Control of Mechanical Structures (Advanced Structured Materials), Ardeshir Guran and Natasa Trisovic, Editors (Mar 8, 2015)
ABSTRACT: This volume provides comprehensive and accessible coverage of recent advances in stability, vibration and control of mechanical structures presented by invited experts during the International Symposium on Stability, Vibration and Control of Systems in Varna (Bulgaria) in June, 2013. The carefully selected contributions offer a sampling of exciting research areas in an assortment of fast-growing branches of stability, vibration and control of mechanical structures. The book involves a modicum of applied mechanics and mathematics and will be of interest to researchers and graduate students in engineering, physics and applied mathematics.

Electromagnetic Wave Interactions (Series on Stability, Vibration & Control of Systems, Vol 12) by Ardeshir Guran, Raj Mittra and Philip J. Moser, Editors (May 1997)
ABSTRACT: This book is a collection of papers on electromagnetic wave mechanics and its applications written by experts in this field. It offers the reader a sampling of exciting research areas in this field. The topics include polarimetric imaging, radar spectroscopy, surface or creeping waves, bistatic radar scattering, and the Seebeck effect. Mathematical methods include inverse scattering theory, singularity expansion method, mixed potential integral equation, method of moments, and diffraction theory. Applications include cellular mobile radios (CMR), radar target identification, and personal communication services (PCS). This book shows how electromagnetic wave theory is currently being utilized and investigated. It involves a modicom of mathematical physics and should be of interest to researchers and graduate students in electrical engineering, physics and applied mathematics.

Stability of Gyroscopic Systems (Series on Stability, Vibration and Control of Structures , Vol 8) by Ardeshir Guran, Anil Bajaj, Yukio Ishida and Noel Perkins, et al, Authors (Dec 1996)
ABSTRACT: Gyroscopic systems are different from conventional, self-adjoint mechanical systems in gyroscopic forces, which are described by non-self-adjoint operators in their equations of motion. These forces are associated with Casiolis accelerations or mass transport and sender complex dynamics. Because of this, classical linear and nonlinear analysis for conventional systems are not applicable to gyroscopic systems. This book includes five chapters on hyrodynamics and its associated emerging areas of smart structures and nonlinear methodology, which have enjoyed a great deal of attention in the recent past and which are of considerable scientific, technological and intellectual value. The synthesis of analytical, experimental and numerical methods should make this the textbook of choice for a graduate course in gyrodynamics, or as additional resource book in a graduate course in stability of mechanical structures. Moreover, the inclusion of an up-to-date bibliography should make it a valuable text for professional reference.

Acoustic Interactions With Submerged Elastic Structures: Acoustic Propagation and Scattering, Wavelets and Time... by Ardeshir Guran, Adrianus De Hoop, Dieter Guicking and Francesco Mainardi, Editors (Jul 2001)
ABSTRACT: The interaction of acoustic fields with submerged elastic structures, both by propagation and scattering, is being investigated at various institutions and laboratories world-wide with ever-increasing sophistication of experiments and analysis. This book offers a collection of contributions from these research centres that represent the present state-of-the-art in the study of acoustic elastic interaction, being on the cutting edge of these investigations. This includes the description of acoustic scattering from submerged elastic objects and shells by the resonance scattering theory of Flax, Dragonette and Uberall, and the interaction of these phenomena in terms of interface waves. It also includes the use of this theory for the purpose of inverse

scattering, i.e. the determination of the scattered objects properties from the received acoustic backscattered signals. The problem of acoustically excited waves in inhomogeneous and anisotropic materials, and of inhomogeneous propagating waves is considered. Vibrations and resonances of elastic shells, including shells with various kinds of internal attachments, are analyzed. Acoustic scattering experiments are described in the time domain, and on the basis of the Wigner-Ville distribution. Acoustic propagation in the water column over elastic boundaries is studied experimentally both in laboratory tanks, and in the field, and is analyzed theoretically. Ultrasonic nondestructive testing, including such aspects like probe modelling, scattering by various types of cracks, receiving probes and calibration by a side-drilled hole is also studied in details. A comprehensive picture of these complex phenomena and other aspects is presented in the book by researchers that are experts in each of these domains, giving up-to-date accounts of the field in all these aspects.

Dynamics With Friction: Modelling, Analysis and Experiment (Series on Stability, Vibration and Control of Systems... by Ardeshir Guran, Friedrich Pfeiffer and Karl Popp, Editors (Jun 2001)
ABSTRACT: The dynamics of dissipative mechanical and structural systems is being investigated at various institutions and laboratories worldwide with ever-increasing sophistication of modelling, analysis and experiments. This book offers a collection of contributions from these research centres that represent the state-of-the-art in the study of friction oscillators. It provides the reader with the fruits of a team effort by leaders in this fascinating field. The present part 2 of this volume on dynamics with friction is a continuation of the previous part 1, and is designed to help synthesize our current knowledge regarding the role of friction in mechanical and structural systems as well as everyday life. The topics covered include interaction of vibration and friction at dry sliding contacts, friction-induced instability in disks, dynamics of lubricated flexible links in kinematic chains, modal interactions in periodic structures, dynamics of an experimentally excited beam, transient waves in viscoelastic materials, dynamic stability of plates with damping, friction modelling and dynamic computation, damping through use of passive and semi-active dry friction forces. This book gives a comprehensive picture of dynamics of dissipative mechanical and structural systems. It also gives an up-to-date account of the present state of the field. It should be of interest to engineers, rheologists, material scientists, applied mathematicians, physicists and historians of science and technology.

Wave Motion, Intelligent Structures and Nonlinear Mechanics: A Herbert Uberall Festschrift Volume (Stability,... by Daniel J. Inman and Ardeshir Guran, Editors (May 1995)
ABSTRACT: Rapid developments in system dynamics and control, areas closely related to many other topics in applied mathematics, call for a comprehensive presentation of current topics. This text, the first of two volumes, contains ten thematically organized research or pedagogical articles addressing key topics in applied dynamics. The material is intended to be of interest to a general scientific and engineering readership, and is also mathematically precise enough to be a useful reference for research specialists in mechanics and control nonlinear dynamics, and in applied mathematics and physics.

Nonlinear Dynamics: The Richard Rand 50th Anniversary Volume (Stability, Vibration and Control of Structures Series... by Ardeshir Guran, Daniel J. Inman and R. H. Rand, Editors (Sep 1995)
ABSTRACT: Rapid developments in system dynamics and control, areas closely related to many other topics in applied mathematics, call for a comprehensive presentation of current topics. This text, the second of two volumes, contains ten thematically organized research or pedagogical articles addressing key topics in applied dynamics. The material should be of interest to a general scientific and engineering readership, and is also mathematically precise enough to be a useful reference for research specialists in mechanics and control nonlinear dynamics, and in applied mathematics and physics.

Uncertainty Modeling in Finite Element, Fatigue and Stability of Systems (Series on Stability, Vibration and Control... by Achintya Haldar, Ardeshir Guran and Bilal M. Ayyub, Editors (Jun 1997)
ABSTRACT: The functionality of modern structural, mechanical and electrical or electronic systems depends on their ability to perform under certain conditions. Consideration of uncertainties and their effect on system behaviour is an essential and integral part of defining systems. In 11 chapters, leading experts present an overview of the current state of uncertainty modelling, analysis and design of large systems in four major areas: finite and boundary element methods (common structural analysis techniques), fatigue, stability analysis, and fault-tolerant systems. It describes research developments and challenges in emerging areas, and provides a toolbox for tackling uncertainty modeling in real systems.

Uncertainty Modeling in Vibration, Control and Fuzzy Analysis of Structural Systems (Series on Stability, Vibration... by Bilal M. Ayyub, Ardeshir Guran and Achintya Haldar, Editors (Jun 1997)
ABSTRACT: This volume aims to give an overview of the state of uncertainty modelling in vibration, control and fuzzy analysis of structural and mechanical systems. Written by leading experts, it offers the reader a sampling of exciting research areas in several fast-growing branches in this field. Uncertainty modelling and analysis are becoming an integral part of system definition and modelling in many fields. The book consists of ten chapters that report the work of researchers, scientists and engineers on theoretical developments and diversified applications in engineering systems. They deal with modelling for vibration, control and fuzzy analysis of structural and mechanical systems under certain conditions. It is designed for readers who are familiar with the fundamentals and wish to study a particular topic or use the book as an authoritative reference. It gives readers a sophisticated toolbox for tackling modelling problems in mechanical and structural systems in realworld situations. The book is part of a series on "Stability, Vibration and Control of Structures", and provides vital information in these areas.

Selected Topics in Structronic and Mechatronic Systems (Stability, Vibration and Control of Systems, Series B,... by Ardeshir Guran and Alexander Belyaev, Editors (May 9, 2003)
ABSTRACT: The scientific community has witnessed a technological revolution in products and processes, from consumer goods to factory automation systems. This revolution is based on the integration, right from the design phase, of the best that technology can offer in electronics, control systems, computers, structures and mechanics. The terms that have emerged, for the synergetic approach to design, and integration of sensors, actuators, computers, structures and mechanics, are "structronics" and "mechatronics". Structronics can be viewed as an integration of mechatronic systems into structures, which emphasizes a synergistic integration beginning at fertilization. Similar to mechatronics (established in the 1980s), structronics is recognized as one of the essential technologies in the 21st century. This comprehensive reference gives an overview of the state of structronics and mechatronics in both structural/mechanical and material systems. Consisting of nine self-contained chapters, it presents developments and covers emerging topics in the field. The key features include: treatment of the nonholonomic variables in robotics; attenuation of fluid flow pulsation in hydraulic systems; presentation of mathematical modelling and experiments on complex nonlinear dynamics of washing machines; a survey of research findings in hydraulic gap control of rolling mills; detailed description of mathematical modelling and nonlinear control of a temper controlling mill; applications of high frequency dynamics in engineering structures development of novel computational methods to include plasticity and damage in flexible multibody systems; new trends in optimal design of engineering structures; a review of ionic polymer metal composites (IPMCs) as sensors, actuators and artificial muscles.

Advances in Mechanics of Solids: In Memory of Professor E. M. Haseganu (Series on Stability, Vibration and Control... by Ardeshir Guran, Andrei L. Smirnov and David J. Steigmann, Authors (Aug 10, 2006)

ABSTRACT: The contributions in this volume are written by well-known specialists in the fields of mechanics, materials modeling and analysis. They comprehensively address the core issues and present the latest developments in these and related areas. In particular, the book demonstrates the breadth of current research activity in continuum mechanics. A variety of theoretical, computational, and experimental approaches are reported, covering finite elasticity, vibration and stability, and mechanical modeling. The coverage reflects the extent and impact of the research pursued by Professor Haseganu and her international colleagues.