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Wave, and Laplace Equations ; 5.1 One-dimensional Heat Equation ; 5.2 Two-dimensional Heat Equation ; 5.3 One-dimensional Wave Equation ; 5.3.1 d" Alembert's Solution ; 5.4 Laplace's Equation ; 5.4.1 Potential in a Rectangle ; 5.5 Maximum Principle ; 5.6 Two-dimensional Wave Equation ; 5.7 Eigenfunctions in Two Dimensions ; 5.8 Summary ; 5.8.1 Problems and Notes ; Chapter 6: Polar Coordinates ; 6.1 Interior Dirichlet Problem for a Disk ; 6.1.1 Poisson Integral Formula ; 6.2 Vibrating Circular Membrane ; 6.3 Bessel's Equation ; 6.3.1 Series Solutions of Odes ; 6.4 Bessel Functions ; 6.4.1 Properties of Bessel Functions ; 6.4.2 Integral Representation of Bessel Functions ; 6.5 Fourier-bessel Series ; 6.6 Solution to the Vibrating Membrane Problem ; 6.7 Summary ; 6.7.1 Problems and Notes ; Chapter 7: Spherical Coordinates ; 7.1 Spherical Coordinates ; 7.1.1 Derivation of the Laplacian ; 7.2 Legendre's Equation ; 7.3 Legendre Functions ; 7.3.1 Legendre Polynomials ; 7.3.2 Fourier-legendre Series ; 7.3.3 Legendre Functions of the Second Kind ; 7.3.4 Associated Legendre Functions ; 7.4 Spherical Bessel Functions ; 7.5 Interior Dirichlet Problem for a Sphere ; 7.6 Summary ; 7.6.1 Problems and Notes ; Chapter 8: Fourier Transforms ; 8.1 Fourier Integrals ; 8.1.1 Fourier Integral Representation ; 8.1.2 Examples ; 8.1.3 Fourier Sine and Cosine Integral Representations ; 8.1.4 Proof of Fourier's Theorem ; 8.2 Fourier Transforms

Sommario/riassunto

Uniquely provides fully solved problems for linear partial differential equations and boundary value problems Partial Differential Equations: Theory and Completely Solved Problems utilizes real-world physical models alongside essential theoretical concepts. With extensive examples, the book guides readers through the use of Partial Differential Equations (PDEs) for successfully solving and modeling phenomena in engineering, biology, and the applied sciences. The book focuses exclusively on linear PDEs and how they can be solved using the separation of variables technique. The authors begin

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Tract And Pelvic Floor -- Imaging Of The Female GU Tract And Pelvic Floor (Will Include Pelvic US, Ct, Mri, Etc) -- Electrophysiologic Evaluation Of The Female Pelvic Floor Disorders -- Urodynamic Evaluation: Traditional, Video, And Ambulatory Approaches -- Endoscopic Evaluation -- Bladder Filling And Emptying Disorders -- Overview Of Diagnosis And Treatment Of Overactive And Underactive/Sensitive Bladder Disorders -- Behavioral Modification And Conservative Management Of Overactive And Underactive/Sensitive Bladder Disorders -- Pharmacologic Treatment Of Overactive And Underactive/Sensitive Bladder Disorders -- Neuromodulation For Overactive And Underactive/Sensitive Bladder And Pelvic Floor Dysfunction: Sacral Interstim®, Posterior Tibial Nerve Stimulation And Pudendal Nerve Stimulation -- Voiding Dysfunction After Female Genitourinary And Pelvic Surgery -- Idiopathic Urinary Retention In The Female -- Bladder Augmentation And Urinary Diversion -- Overview Of Pathophysiology And Diagnostic Evaluation Of Stress Urinary Incontinence -- Pelvic Floor Rehabilitation And Other Nonsurgical Management Modalities -- Retropubic Suspension Operations For Stress Urinary Incontinence -- Sling Operations For Stress Urinary Incontinence And Their Historical Evolution: Autologous, Cadaveric, And Synthetic Slings -- Complications Of Stress Urinary Incontinence Surgery -- Artificial Urinary Sphincter For Female Stress Urinary Incontinence -- Urethral Bulking Agent Injectables -- Burch Colposuspension: Laparoscopic And Robotic -- Management Of Urinary Incontinence In The Female Neurologic Patient -- Stem Cell And Tissue Engineering In Female Urinary Incontinence -- Pelvic Organ Prolapse -- Overview Of Etiology Workup And Management Of Pelvic Organ Prolapse -- Transvaginal Repair Of Cystocele -- Open Abdominal Repair Of Cystocele -- Minimally Invasive Approaches: Laparoscopic And Robotic -- Complications Of The Use Of Synthetic Mesh Materials In Stress Urinary Incontinence And Pelvic Organ Prolapse -- Surgical Repair Of Vaginal Vault Prolapse: Sacrospinous Ligament Fixation, Use Of Synthetic Mesh, Uterosacral Vault Fixation -- Role Of Vaginal Hysterectomy In The Treatment Of Vaginal Vault Prolapse -- Minimally Invasive Sacrocolpopexy -- Open Abdominal Sacral Colpopexy -- Use Of Mesh In Posterior Vaginal Vault Prolapse Repair -- Complications Of Vagina Reconstructive Surgery -- Urethral Reconstruction: Fistulae, Diverticula And Strictures -- Overview, Epidemiology And Etiopathogenetic Differences In GU Fistula Between Developed And Developing Worlds -- Urethrovaginal Fistula Repair -- Reconstruction Of The Absent Or Severely Damaged Urethra -- Vesicovaginal Fistula Repair: Abdominal Approach -- Vesicovaginal Fistula Repair: Vaginal Approach -- Rectovaginal Fistula Repair -- Ureterovaginal Fistula Repair -- Surgical Reconstruction Of Urethral Stricture (Non-Pfui) -- Surgical Reconstruction Of Pelvic Urethral Fracture Injury In The Female -- Urethral Diverticula Repair -- Ureteral Reconstruction -- Surgical Reconstruction Of Ureteral Defects: Strictures, External Trauma, Iatrogenic And Radiation-Induced Injuries -- Techniques Of Ureteral Reimplantation -- Pelvic Pain, Irritative Voiding Disorders And Female Sexual Dysfunction -- Pathophysiology Of Pelvic Pain -- Painful Bladder Syndrome And Interstitial Cystitis -- Female Sexual Dysfunction -- Fecal Incontinence And Defecatory Dysfunction -- Pathophysiology, Diagnosis, And Treatment Of Defecatory Dysfunction -- Management Of Fecal Incontinence, Constipation And Rectal Prolapse -- Use Of Bowel In Genitourinary And Pelvic Reconstruction And Other Complex Scenarios -- Overview Of The Indications And Use Of Bowel In Female Lower Urinary Tract Reconstruction -- Options For Reconstruction Of The Heavily Irradiated Pelvis -- Complications After Female Neobladder

And Continent Cutaneous Diversion -- Genitourinary And Pelvic Trauma: Iatrogenic And Violent Causes (War And Civil Causes) -- Surgical Reconstruction Of Obstetric And Pelvic Iatrogenic Trauma -- Surgical Reconstruction Of Pelvic Violent Trauma (War And Civil) -- Female Genital Mutilation -- Vaginoplasty And Neovagina Construction In Congenital Defects, Trauma And Gender Affirming Surgery -- (Neo) Vaginoplasty In Female Pelvic Congenital Anomalies -- Genital Reconstruction In Male-To-Female Gender Affirmation Surgery -- Complications Of Gender-Affirming Surgery -- Female Genital Cosmetic Surgery. .

Sommario/riassunto

This book provides a comprehensive guide to the latest techniques in female genitourinary and pelvic floor disorders. It features detailed insight into these conditions along with detailed descriptions of how treatment has changed in recent times for these disorders. The latest methodologies for pharmacological treatment, conservative therapy, surgical techniques, and how to avoid potential complications are discussed. Topics including relevant neurophysiology, measurement of urinary symptoms, pelvic organ prolapse and ureteral reconstruction are covered. Female Genitourinary and Pelvic Floor Reconstruction is a detailed resource detailing the latest developments in the field, making it an ideal resource for all clinicians who encounter these patients in their daily practice. .
