1. Record Nr. UNINA9910338247703321 Autore Wilbrandt Ulrich Titolo Stokes-Darcy Equations: Analytic and Numerical Analysis / / by Ulrich Wilbrandt Pubbl/distr/stampa Cham:,: Springer International Publishing:,: Imprint: Birkhäuser,, 2019 **ISBN** 3-030-02904-2 Edizione [1st ed. 2019.] Descrizione fisica 1 online resource (VIII, 212 p. 37 illus., 17 illus. in color.) Collana Lecture Notes in Mathematical Fluid Mechanics, , 2510-1374 515.7 Disciplina 532.001515353 Soggetti Functional analysis Numerical analysis **Functional Analysis Numerical Analysis** Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Notation and preliminary results -- Properties of Sobolev spaces --Nota di contenuto Traces -- Subproblems individually -- Stokes-Darcy equations --Algorithms -- Numerical results. This book offers a thorough guide starting from fundamental functional Sommario/riassunto analysis leading to the coupling of Stokes and Darcy equations. including numerical analysis and scientific computing. Almost all intermediate results are given with complete, rigorous proofs, including theorems which can be rarely found in the literature such that this book serves well as a reference on the topic. Special care is taken to analyze the difficult cases of non-smooth interfaces which are not completely enclosed in one subdomain, i.e, intersect with the outer boundary. This can hardly be found in the literature. Additionally, known and new subdomain iterative methods are introduced, analyzed and applied to standard examples as well as one example motivated by a geoscientific

setting.