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Titolo	Polyharmonic Boundary Value Problems [[electronic resource]] : Positivity Preserving and Nonlinear Higher Order Elliptic Equations in Bounded Domains / / by Filippo Gazzola, Hans-Christoph Grunau, Guido Sweers
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Nota di bibliografia	Includes bibliographical references and indexes.
Nota di contenuto	Models of Higher Order -- Linear Problems -- Eigenvalue Problems -- Kernel Estimates -- Positivity and Lower Order Perturbations -- Dominance of Positivity in Linear Equations -- Semilinear Problems -- Willmore Surfaces of Revolution.
Sommario/riassunto	This monograph covers higher order linear and nonlinear elliptic boundary value problems in bounded domains, mainly with the biharmonic or poly-harmonic operator as leading principal part. Underlying models and, in particular, the role of different boundary conditions are explained in detail. As for linear problems, after a brief

summary of the existence theory and Lp and Schauder estimates, the focus is on positivity or - since, in contrast to second order equations, a general form of a comparison principle does not exist - on “near positivity.” The required kernel estimates are also presented in detail. As for nonlinear problems, several techniques well-known from second order equations cannot be utilized and have to be replaced by new and different methods. Subcritical, critical and supercritical nonlinearities are discussed and various existence and nonexistence results are proved. The interplay with the positivity topic from the rst part is emphasized and, moreover, a far-reaching Gidas-Ni-Nirenberg-type symmetry result is included. Finally, some recent progress on the Dirichlet problem for Willmore surfaces under symmetry assumptions is discussed.