Contents

Preface — V

Ana Alonso Rodríguez, Enrico Bertolazzi, and Alberto Valli

1 The curl-div system: theory and finite element approximation — 1

Sebastian Bauer

2 Darwin and higher order approximations to Maxwell's equations in \mathbb{R}^3 — 45

Sebastian Bauer, Dirk Pauly, and Michael Schomburg

3 Weck's selection theorem: The Maxwell compactness property for bounded weak Lipschitz domains with mixed boundary conditions in arbitrary dimensions — 77

Anne-Sophie Bonnet-Ben Dhia, Sonia Fliss, and Yohanes Tjandrawidjaja

4 Numerical analysis of the half-space matching method with Robin traces on a convex polygonal scatterer — 105

Samuel Cogar, David Colton, and Peter Monk

5 Eigenvalue problems in inverse electromagnetic scattering theory ----- 145

Martin Costabel and Monique Dauge

6 Maxwell eigenmodes in product domains — 171

Ralf Hiptmair and Clemens Pechstein

7 Discrete regular decompositions of tetrahedral discrete 1-forms ---- 199

Rainer Kress

8 Some old and some new results in inverse obstacle scattering — 259

Serge Nicaise and Jérôme Tomezyk

9 The time-harmonic Maxwell equations with impedance boundary conditions in polyhedral domains ---- 285

Frank Osterbrink and Dirk Pauly

10 Time-harmonic electro-magnetic scattering in exterior weak Lipschitz domains with mixed boundary conditions — 341



X ---- Contents

Rainer Picard

11 On an electro-magneto-elasto-dynamic transmission problem ----- 383

Marcus Waurick

12 Continuous dependence on the coefficients for a class of non-autonomous evolutionary equations — 403