

Table of Contents

I. Poincaré Duality	1
§ 1. Slant Operations, Cup and Cap Products	1
§ 2. Poincaré Duality	6
§ 3. Poincaré Pairs and Triads; Sums of Poincaré Pairs and Maps.	12
§ 4. The Spivak Normal Fibre Space	17
II. The Main Results of Surgery	30
§ 1. The Main Technical Results	30
§ 2. Transversality and Normal Cobordism	33
§ 3. Homotopy Types of Smooth Manifolds and Classification	39
§ 4. Reinterpretation Using the Spivak Normal Fibre Space	45
III. The Invariant σ	51
§ 1. Quadratic Forms over \mathbb{Z} and \mathbb{Z}_2	52
§ 2. The Invariant $I(f)$, (index).	56
§ 3. Normal Maps, Wu Classes, and the Definition of σ for $m = 4l$	60
§ 4. The Invariant $c(f, b)$ (Kervaire invariant)	64
§ 5. Product Formulas	74
IV. Surgery and the Fundamental Theorem	83
§ 1. Elementary Surgery and the Group $SO(n)$	83
§ 2. The Fundamental Theorem: Preliminaries	93
§ 3. Proof of the Fundamental Theorem for m odd	101
§ 4. Proof of the Fundamental Theorem for m even	107
V. Plumbing	114
§ 1. Intersection	114
§ 2. Plumbing Disk Bundles	116
Bibliography	127
Subject Index	131