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Correction to "Locally flat 2-spheres in simply connected 4-manifolds"

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In the proof of Theorem 1.2 of [3], p. 410, line-12, we asserted that $[P, h, z] \oplus H(\Lambda^r)$ has an orthogonal summand equivalent to $H(\Lambda^{r+1})$. This is indeed the case when $b_2(N) > |\sigma(N)| + 2$. For then $[H_2(N), \lambda, x] \oplus H(\mathbf{Z}^r)$ splits off a copy of $H(\mathbf{Z}^{r+1})$ and the assertion follows by Theorem 4.6. However, as already pointed out in Remark 4.5, $[H_2(N), \lambda, x] \oplus H(\mathbf{Z}^r)$ may not split off $H(\mathbf{Z}^{r+1})$ in the case $b_2(N) = |\sigma(N)| + 2$. Thus to show that the stable equivalence of (4.13) implies $[P, h, z] \cong [P', h', z']$ in this case as well, one argues that (i) $[P, h] \otimes_\Lambda \mathbf{Z}[\zeta_n]$ has an orthogonal summand equivalent to $H(Z[\zeta_n])$ for each $n \mid d$, $n > 1$, and (ii) $[P, h] \otimes_\Lambda \hat{\Lambda}$ has an orthogonal summand of rank ≥ 1 which is perpendicular to $z \otimes 1$. (This works also in the case $b_2(N) > |\sigma(N)| + 2$.) For then the conclusion of Theorem 4.2 holds (see Remark 4.5) and the rest of the argument goes through without change. It remains to show (i) and (ii). As before, (i) follows from the signature hypothesis $b_2(N) > \max_{0 \leq j < d} |\sigma(N) - 2j(d-j)(1/d^2)x \cdot x|$ by Theorem 10 of [4]. Since $[P, h] \otimes_\Lambda \hat{\mathbf{Z}}$ has an orthogonal summand of rank ≥ 1 which is perpendicular to $z \otimes 1$, (ii) follows by the commutative diagram on p. 406.

In the proof of Theorem 4.6, p. 407, line-7, the result of [1] was misapplied. The argument was made for a primitive class $\hat{z}$ whereas [1] requires the class to be unimodular. Therefore the argument should be applied instead to the unimodular class in $\hat{P} \otimes_{\hat{\Lambda}} \hat{Z}$ whose d multiple equals $\hat{z} \otimes 1$. This yields an isometry η of $[P, h] \otimes_\Lambda \hat{\mathbf{Z}}$ which maps $\hat{z} \otimes 1$ to the class corresponding to $\hat{\alpha}(z \otimes 1)$. It follows from the discussion in [2, ch. IV §3] that, for $k > 2$, there are such isometries η which lift to $[P, h] \otimes_\Lambda \hat{\Lambda}$. Since $\hat{z} \in \hat{P}^G$, any lifted isometry will map $\hat{z}$ to $\hat{\alpha}(z \otimes 1)$, as required.

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JAMES FORAN, **Fundamentals of Real Analysis,** Marcel Dekker, inc., 1991, 496 p.p. $59.75.

Preface – 1.1. Basic Definitions and Background Material – 1.2. Additional Basic Theorems – 2.1. Sets and Cardinal Numbers – 2.2. Discussion of Axiomatic Set Theory – 3.1. Well-Ordered Sets and Ordinal Numbers – 3.2. Applications of the Axiom of Choice – 4.1. Borel Sets and Baire Functions – 4.2. Exact Baire Classes – 5.1. Measure and Measurable Sets – 5.2. Additive Functions of a Set – 6.1. Measurable Functions – 6.2. Density Topology and Approximate Continuity – 7.1. The Lebesque Integral – 7.2. Introduction to L^p spaces – 8.1. Differentiation of the Integral – 8.2. Differentiation of Functions of a Set – 9.1. The Denjoy–Perron Integral – 9.2. The Denjoy Integral – Index.

R. KIRCHER, W. BERGNER, **Three-Dimensional Simulation of Semiconductor Devices,** Birkhäuser Verlag, 1991, 124 p.p., Sfr. 82.-.

1. Introduction – 1.1 Device Modeling – 1.2 Three-Dimensional Effects in VLSI Structures – 1.3 History of Three-Dimensional Device Simulation – 2. Basic Physical Models – 2.1 Carrier Densities – 2.2 Doping Concentration – 2.3 Carrier Mobilities – 2.4 Generation and Recombination – 2.5 Modeling of Device Boundaries – 2.5.1 Contacts – 2.5.2 Interfaces – 2.5.3 Artificial Boundaries – 2.6 Limits of Classical Device Modeling – 3. Discretization – 3.1 Spatial Discretization – 3.2 Discretization of Poisson's Equation – 3.3 Discretization of the Continuity Equations – 3.4 Discretization of Boundary Conditions – 3.4.1 Dirichlet Points – 3.4.2 Neumann Boundaries – 3.5 Non-Planar Boundaries – 3.6 Time Discretization – 3.7 Charge Conservation – 4. Numerical Solution –4.1 Non-linear System – 4.2 Gummel's Relaxation Method – 4.3 Super Iterations – 4.4 Set of Variables – 4.5 Solution of the Linear System – 4.5.1 Symmetrical Matrix 4.5.2 Asymmetrical Matrix – 4.5.3 Vectorization – 4.5.4 Preconditioning – 4.6 Calculation of Physical Magnitudes – 4.6.1 Electric Field – 4.6.2 Current Densities and Terminal Currents – 4.6.3 Capacitance – 5 Examples – 5.1 Depletion-Type Trench Cell – 5.2 IVEC Cell.

ARTHUR G. WERSCHULZ, **The Computational Complexity of Differential Integral Equations,** An information-based approach, Oxford University Press, 1991, 331 p.p. £35.-.

1. Introduction – 2. Example: a two-point boundary value problem – 2.1 Introduction – 2.1.1 Problem formulation – 2.1.2 Information – 2.1.3 Model of computation – 2.2. Error, cost, and complexity – 2.3 A minimal error algorithm. 2.4 Complexity bounds – 2.5 Comparison with the finite element method – 2.6 Standard information – 2.7 Final remarks – 3. General formulation – 3.1 Introduction – 3.2 Problem formulation – 3.3 Information – 3.4 Model of computation – 3.5 Algorithms, their errors, and their costs – 3.6 Complexity – 3.7 Randomized setting – 3.8 Asymptotic setting – 4. The worst case setting: general results – 4.1 Introduction – 4.2 Radius and diameter – 4.3 Complexity – 4.4 Linear problems – 4.4.1 Definition – 4.4.2 Adaptive vs. nonadaptive information – 4.4.3 Optimal information – 4.4.4 Linear algorithms for linear problems – 4.4.5 Complexity – 4.5 The residual error criterion – 4.5.1 Basic definitions – 4.5.2 Reduction to the approximation problem – 4.5.3 Linear algorithms – 4.5.4 Complexity – 5. Elliptic partial differential equations in the worst case setting – 5.1 Introduction – 5.2 Variational elliptic boundary value problems – 5.3 Problem formulation – 5.4 The normed case with arbitrary linear information – 5.5 The normed case with standard information 5.6 The seminormed case – 5.7 Can adaption ever help? – 6. Other problems in the worst case setting – 6.1 Introduction – Linear elliptic systems – 6.2.1 Problem formulation – 6.2.2 Arbitrary linear information – 6.2.3 Standard Information – 6.3 Fredholm problems of the second kind – 6.3.1 Problem formulation – 6.3.2 Arbitrary linear information – 6.3.3. Standard information – 6.4 Ill-posed problems – 6.4.1 Definition – 6.4.2 The absolute error criterion – 6.4.2 The residual error criterion – 6.5 Ordinary differential equations – 6.5.1 Standard information – 6.5.2 Other information – 7. The average case setting – 7.1 Introduction – 7.2 Some basic measure theory – 7.3 General results for the average case setting – 7.4 Complexity of shift-invariant problems 7.4.1 Problem definition – 7.4.2 Continuous