

Errata for *Surgery on compact manifolds* by C.T.C. Wall
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Please let me know of any further misprints/errors by e-mail to a.ranicki@ed.ac.uk
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- p. xi l. -4 Strictly speaking, the actual disproof of the manifold Hauptvermutung was first obtained by Kirby and Siebenmann in 1969 – see the 1967 papers of Casson and Sullivan published in 1996 in the Hauptvermutung Book [R11] <http://www.maths.ed.ac.uk/~aar/books/haupt.pdf> for what they actually did. The prehistory of the disproof is given in the paper of Novikov *Classical and modern topology. Topological phenomena in real world physics* GAFA 2000 (Tel Aviv, 1999), Special Volume, Part I, 406–424, e-print <http://arXiv.org/abs/math-ph/0004012>
 Also, there is an account of the Hauptvermutung by Rudyak in the e-print <http://arXiv.org/abs/math.AT/0105047>
- p. 4 l. 9 $\sigma_n S(\alpha) = 0$
- p. 8 l. -16 Insert *for a finite simplicial complex X* before *every normal map*
- p. 15 l. -10 Replace by
- $$H_{k+1}(H \cup \partial N_0, \partial N) \rightarrow H_{k+1}(\phi) \rightarrow H_{k+1}(\phi_0) \rightarrow H_k(H \cup \partial N_0, \partial N).$$
- p. 20 l. 5 $\pi_1(U - K, \partial U)$
- p. 20 ll. 9, 25 “Corollary 2.4.2” should be “second corollary (not indexed) to Theorem 1.7”
- p. 20 l. 13 “Now let S^1 be a circle in $C := S^m - K$ ”
- p. 20 ll. 17,18,25,26 replace the 6 occurrences of the variable n with m
- p. 20 l. 17 “Thus if any $\pi_i(C)$ with $2 \leq i \leq m - 3$ ”
- p. 24 l. 1 “ $K \times K^*$ ”
- p. 29 l. 13 “ $Z = Y \cup Y'$ ”
- p. 35 l. -8 “ $\partial_n \pi \xrightarrow{i} \delta_n \pi$ ”
- p. 35 l. -7 “ $L_{m-1}(\partial_n \pi)$ ”
- p. 36 l. 12 “Given an object P of type $\mathbf{2}^2$ ”
- p. 40 l. -15 “ $H_k(U, U \cap M) \cong H_k(U \cup M, M) \rightarrow K_k(N, M)$ ”

- p. 40 l. -13 “ s -base on $K_k(N, M)$ ”
- p. 41 l. 3 “hence so is the upper ϕ^* .”
- p. 43 l. 2 “ $(Y \times I; Y \times 0 \cup X \times I, Y \times 1)$ ”
- p. 54 l. 4 Replace by $\phi : (M; \partial_- M, \partial_+ M) \rightarrow (X \times I; X \times 0 \cup \partial X \times I, X \times 1)$
- p. 55 l. -5 “ s -cobordism of $\partial_+ M$ to $\partial_+ M'$ ”
- p. 59 l. 12 “this is obvious *a priori*, as ∂U is”
- p. 65 l. 10 “Hence $A \oplus A^{-1} \in RU(\Lambda)$ ”
- p. 68 l. 21 “since by (6.3) $RU(\Lambda)$ is a normal subgroup”
- p. 69 l. 1 “This replaces $X \times I$ by its boundary-connected sum with r copies of $S^k \times D^{k+1}$ ”
- p. 75 l. 4 “We wish to do surgery relative to M_- ”
- p. 93 l. -3 “ $Y' = Y_0 \cup_{\partial H} H$ ”
- p. 96 l. -4 “a map $\Omega : Y \rightarrow s_n K$ ”
- p. 97 l. 7 “ $\Omega_{\alpha, n, n+1} : Y_{\alpha, n, n+1} \rightarrow s_n K_{\alpha, n, n+1} = K_\alpha$ ”
- p. 97 l. 19 “we may suppose by induction that for all $\beta \subsetneq \alpha$ ”
- p. 98 l. 2 “This proves exactness at $\delta_n K$ ”
- p. 98 l. 3 “Exactness at K follows since $d_* j_* = 0$ ”
- p. 101 l. -2 “Now suppose m is odd; write $m = 2k - 1$, $k \geq 3$ ”
- p. 107 l. -20 “bordism class χ of (M, ϕ, F) ”
- p. 108 l. -12 “ $1 \leq i < n$ ”
- p. 111 l. -19 “If $m = n + 3$, the map is surjective.”
- p. 111 l. -1 “Then N' , and the composite”
- p. 112 l. 2 “Moreover, if θ' ”
- p. 112 l. 6 “normal map (N'', ϕ'', F'') ”
- p. 112 l. 11 “surgery obstruction θ' for N' ”
- p. 113 l. -6 “and of $\mathcal{T}^{\text{Diff}}(X, \partial_n X)$ ”
- p. 114 l. 7 “since $\tau_M \oplus \nu' \cong \phi^*(\tau_X \oplus \varepsilon^k)$ ”
- p. 114 l. 12 “defines a fibre homotopy trivialization h of ν' ”

- p. 114 l. -15 “ $\mathcal{T}^{PL}(X \times I, X \times \partial I) \rightarrow$ ”
- p. 114 l. -12 “standard structure on $X \times \partial I \cup \partial_n X \times I$ ”
- p. 115 l. 8 “an element α of $[\Sigma(X/\partial_n X), G/PL]$ ”
- p. 120 l. -14 “Then (M, E_0) need not”
- p. 121 l. -15 “ $V \simeq C \cup M(p) \rightarrow$ ”
- p. 122 l. 1 “(locally flat PL) embedding”
- p. 122 l. -9 “ $\tau_L \oplus \phi^*(i^* \nu_{M(p)} \oplus \xi)$ ”
- p. 123 l. 7 “Since $|Y|$ is homotopy”
- p. 123 ll. 9, 10 replace A' with A
- p. 123 l. -17 “homotopy equivalent to $|Y|$ ”
- p. 124 l. -1 “ $(h|C)_*$ ”
- p. 125 l. 6 “ $f(|M|)$ ”
- p. 125 l. 16 “ $|M|$ ”
- p. 125 l. -9 “inducing A' over M' ”
- p. 125 l. -7 “glueing along $B = A' \times \partial(V \times 1)$ a copy of $B \times I$ ”
- p. 126 l. -10 “ $f : M \rightarrow \delta_{n+1} V$ ”
- p. 131 l. -4 Replace $M^{n-1} \rightarrow V^{n+q-1}$ by $E \rightarrow F$, where (F, E) is the complement of the simple Poincaré embedding $N \rightarrow W$, such that $F \cup M(p_E) \simeq W$ with $p_E : E \rightarrow N$ the projection of the normal $(q-1)$ -spherical fibration and $F \cap M(p_E) = E$.
- p. 131 ll. -8, -9, p. 133 footnote Replace $p : X \rightarrow Y$ by $P : X \rightarrow Y$
- p. 133 l. 14 “relative to M ”
- p. 133 l. 15 “induced on N ”
- p. 133 ll. 18, 19 “ D^q -bundles”
- p. 133 l. 18 “ $N' \subset W$ ”
- p. 133 l. 19 The surgery problem for D^2 -bundles is induced from a relative one for Poincaré tetrads, namely ∂_1 of the surgery problem
- $(W \times I; A', \text{cl.}(W \times 1 - A'), W \times 0) \rightarrow (M(W \simeq M(p) \cup C); M(p), C, W \times 0)$
- with normal bundle $\nu_{W \times I}$ and canonical stable trivialization of $\tau_{W \times I} \oplus \nu_{W \times I}$ and A' the total space of $\nu_{N' \subset W}$. This represents (cf. p. 96) a tetrad object in $L_{n+q+1}(\Phi)$ with the simple homotopy equivalence on ∂_3 being the identity $W \times 0 \rightarrow W \times 0$. Of course, Φ is a triad. (Khan)

- p. 133 l. 21 “ $L_{n+q+1}(\Phi) \rightarrow L_{n+q}(A \rightarrow B) \rightarrow L_{n+q}(C \rightarrow D)$ ”
- p. 133 l. -12 Replace by “The pullback D^q -bundle (M, E) over N induced by the universal fibration for $A \rightarrow B$ ”
- p. 133 l. -10 “in the kernel”
- p. 134 l. 8 “submanifold $M' \subset V^{n+q}$ ”
- p. 134 l. -3 “Now attach handles”
- p. 135 l. 2 “together W_1, W_2 (as in proof of (11.3)), and the same disc bundle”
- p. 136 l. 7 “ $r(y) = r(x)$ ”
- p. 137 l. -3 “*nonorientable*”
- p. 142 l. -03 “along $V'_1 \times 1$ ”
- p. 143 l. 12 “split into V_1 and $V_2 = X'\{2\}$ ”
- p. 144 l. 15 Replace 2 occurrences of “ $\delta_2 U$ ” with “ $\delta_2 W$ ”
- p. 144 l. -6 Replace “By (12.1)” by “By (10.3)”
- p. 145 l. 11 “ $\cup(M' \times 1)$ ”
- p. 146 l. 5 “ $C = \pi(C)$ ”
- p. 146 l. -12 “(3.1) gives a third sequence (i, j, ∂_2) ”
- p. 146 l. -5 “and $p_0 r(x)$ ”
- p. 146 footnote “case $A = B, C = D$ ”
- p. 159 l. 11 “ $H_k(A^+, \widetilde{M}; \Lambda')$ ”
- p. 160 l. -1 “multiplication by g_0 ”
- p. 161 l. 1 Should read *In one case*
- p. 161 l. -12 “note that”
- p. 161 l. -5 “the lower sequence from (3.1)”
- p. 162 l. -5 “ $H_{k+1}(\widetilde{V} \times I, \widetilde{V} \times 0 \cup \widetilde{N}; \Lambda')$ ”
- p. 163 l. -12 “a double point of $f_1 : S^k \rightarrow M$ ”
- p. 164 l. 11 “with fundamental group π' ”
- p. 164 l. 21 “ $\mu_0(e_i) = b_i$ ”
- p. 165 l. 9 “ $M_0 = M - \bigcup f_i(S^k \times \text{Int } D^{k+1})$ ” and “ $\widetilde{M}_0 = \widetilde{M} - \text{Int}(U^+ - U^-)$ ”

- p. 166 l. -14 Replace “for if” by “for”
- p. 167 l. -24 “disjoint embeddings $\tilde{f}_i : (D^{k+1}, S^k) \times D^{k+1}$ ”
- p. 167 l. -22 “embeddings \tilde{g}_i ”
- p. 167 l. -21 “of \tilde{f}_i to \tilde{g}_i ”
- p. 167 l. -15 “spheres $f_i(S^k \times 0) \subset M$ ”
- p. 167 l. -4 “ \tilde{f}_1, \tilde{f}_2 ”
- p. 168 l. -16 “ $A^- \cup \tilde{N}$ ”
- p. 169 l. 2 unlabelled reference “(3)” to second sequence on p. 168
- p. 169 l. 12 “ N^{2k+1} ” and “ ∂N ”
- p. 173 l. 3 “ $L_3(\mathbf{Z}_2^+)$ ”
- p. 173 l. -10 *established.*
- p. 186 l. -1 Remove a
- p. 206 l. 11 Should read $[P_n(\mathbf{R}), Y] = [P_5(\mathbf{R}), Y]$
- p. 221 l. -4 Should read *of a representation*
- p. 233 l. 16 $H^3(T^n; \mathbf{Z}_2) \cong$
- p. 240 l. -9 “Davis [D1]”
- p. 258 l. 21 The reference to Kirby [K8] should be replaced by a reference to R. Kirby and L.C. Siebenmann, *Normal bundles for codimension 2 locally flat imbeddings*, Geometric topology, Park City, Utah, 1974, pp. 310–324. Lecture Notes in Math., Vol. 438, Springer, Berlin (1975).
- p. 276 l. 1 Replace (C, ψ) by (C, ϕ)