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Proof of Theorem 1.5. We show $-p_*\tau(\bar{\Phi}^\gamma)_*([S^1])$ coincides with Definition B₁. As in the proof of Theorem 1.1(i) above, we may assume that X is a compact polyhedron which is PL embedded in some \mathbf{R}^n as a strong deformation retract of a compact codimension 0 PL submanifold, M . Extend Φ^γ to a map $\Psi^\gamma: M \times S^1 \rightarrow X \hookrightarrow M$ by precomposing with $r \times \text{id}$ where $r: M \rightarrow X$ is a strong deformation retraction. The homotopy invariance of Definition B₁ and Theorem 10.1 imply that $-I_R(\Psi^\gamma) = \chi_1(X, R)(\gamma)$. By [D₃, (3.3)] and [BG, §9], $I_R(\Psi^\gamma)$ coincides with $p_*\tau(\bar{\Phi}^\gamma)_*([S^1])$. \square

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