

**Hegenbarth, Friedrich; Muranov, Yuri V.; Repovš, Dušan****Surgery in codimension 3 and the Browder-Livesay invariants.** (English) Zbl 1344.19002

Turk. J. Math. 37, No. 5, 806-817 (2013).

Summary: The inertia subgroup  $I_n(\pi)$  of a surgery obstruction group  $L_n(\pi)$  is generated by elements that act trivially on the set of homotopy triangulations  $\mathcal{S}(X)$  for some closed topological manifold  $X^{n-1}$  with  $\pi_1(X) = \pi$ . This group is a subgroup of the group  $C_n(\pi)$ , which consists of the elements that can be realized by normal maps of closed manifolds. These 2 groups coincide by a recent result of Hambleton, at least for  $n \geq 6$  and in all known cases. In this paper we introduce a subgroup  $J_n(\pi) \subset I_n(\pi)$ , which is generated by elements of the group  $L_n(\pi)$ , which act trivially on the set  $\mathcal{S}^\partial(X, \partial X)$  of homotopy triangulations relative to the boundary of any compact manifold with boundary  $(X, \partial X)$ . Every Browder-Livesay filtration of the manifold  $X$  provides a collection of higher-order Browder-Livesay invariants for any element  $x \in L_n(\pi)$ . In the present paper we describe all possible invariants that can give a Browder-Livesay filtration for computing the subgroup  $J_n(\pi)$ . These are invariants of elements  $x \in L_n(\pi)$ , which are nonzero if  $x \notin J_n(\pi)$ . More precisely, we prove that a Browder-Livesay filtration of a given manifold can give the following invariants of elements  $x \in L_n(\pi)$ , which are nonzero if  $x \notin J_n(\pi)$ : the Browder-Livesay invariants in codimensions 0, 1, 2 and a class of obstructions of the restriction of a normal map to a submanifold in codimension 3.

**MSC:**

- 19J25 Surgery obstructions ( $K$ -theoretic aspects)
- 55T99 Spectral sequences in algebraic topology
- 58A35 Stratified sets
- 18F25 Algebraic  $K$ -theory and  $L$ -theory (category-theoretic aspects)

**Keywords:**

surgery assembly map; closed manifolds surgery problem; assembly map; inertia subgroup; splitting problem; Browder-Livesay invariants; Browder-Livesay groups; normal maps; iterated Browder-Livesay invariants; manifold with filtration; Browder-Quinn surgery obstruction groups; elements of the second type of a wall group

**Full Text:** [Link](#)