

Bounding genera of several infinite families of Brieskorn homology 3-spheres

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Abstract. The bounding genus is a homology cobordism invariant of homology 3-spheres introduced by Y. Matsumoto in 1982 and defines a kind of distance between homology 3-spheres. Matsumoto gave upper bounds of the bounding genera for certain infinite families of homology 3-spheres by handling techniques of the Dehn-Kirby calculus and formulated his celebrated $11/8$ -conjecture. In this talk, we determine the bounding genera of several infinite families of Brieskorn homology 3-spheres in the list given by Matsumoto. In fact, we give lower bounds in terms of a signature defect-type invariant (w -invariant) by using of a V -manifold version of Furuta's $10/8$ -inequality, and combining with Matsumoto's estimates we can determine the bounding genera. Thanks to a referee's comment, we could determine the bounding genera for the infinite families by using an equivalence of the w -invariants and the Neumann-Siebenmann invariants. If we have time, I would also like to talk about a possibility of a generalization of bounding genera under the cobordism category of 3-manifolds by using of a V -manifold version of the Furuta-Kametani $10/8$ -inequality for the case with positive first Betti numbers.