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Arnaud Deruelle, Katura Miyazaki and Kimihiko Motegi*

(motegi@math.chs.nihon-u.ac.jp), 3-25-40 Sakurajosui, Setagaya-Ku, Tokyo, 156-8550, Japan.

Networking Seifert surgeries on knots.

How do Seifert fiber spaces arise after Dehn surgeries on hyperbolic knots? We approach this question in introducing “seiferters” and constructing the Seifert Surgery Network, a 1-dimensional complex whose vertices correspond to Seifert surgeries. A seiferters for a Seifert surgery is a trivial knot in the 3-sphere that becomes a fiber in the resulting Seifert fiber space. Twisting a Seifert surgery along its seiferters yields another Seifert surgery. Edges of the network correspond to such twistings. A path from a given Seifert surgery to that on a torus knot in the network explains how the surgery arises from one of the most basic Seifert surgeries. Studying Seifert surgeries through the network is as if we do not only diagnose an illness, but also detect its source of infection. In this talk, we look at some particular examples to illustrate our idea and give some fundamental results on the combinatorial structure of the Seifert Surgery Network. (Received September 14, 2009)