A complex volume formula via quandle shadow coloring

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Abstract. For a hyperbolic manifold M, Vol(M) + iCS(M) is called the complex volume of M where Vol(M) and CS(M) are volume and Chern-Simons invariant of M respectively. W. Neumann defined the extended Bloch group $\hat{B}(C)$ and gave a formula of the complex volume using $\hat{B}(C)$. In this talk, we introduce a construction of the element of extended Bloch group from the quandle 2-cycle associated with a shadow coloring. Combined with works of Neumann and Dupont-Zickert, we obtain a formula of complex volume. This is a joint work with Ayumu Inoue (Tokyo Institute of Technology).