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Maciej Niebrzydowski and **Jozef H. Przytycki*** (przytyck@gwu.edu), Department of Mathematics, George Washington University, Monroe Hall, Room 240 2115 G Street NW, Washington, DC 20052. *The second quandle homology of odd Takasaki quandles and exterior algebra.* Preliminary report.

We are partially computing the second quandle homology of a finite connected Takasaki quandles. For an abelian group G the Takasaki quandle (or Kei), $T(G)$, is defined using the binary operation $*$ by $a*b = 2a - b$. A finite Takasaki quandle is connected iff $|G|$ is odd. Greene showed that $H_2^Q(T(Z_k)) = 0$ for k odd. We show that $H_2^Q(T(Z_k \oplus Z_k)) = Z_k$, k odd. Furthermore, we construct the epimorphism $H_2^Q(T(Z_k^n)) \rightarrow Z_k^{\binom{n}{2}}$, k odd. More generally, we prove that for an abelian group G of odd rank, there is an epimorphism from $H_2^Q(T(G))$ to $\Lambda^2(ZG)$ where Λ is the exterior tensor algebra. We analyze when this epimorphism is an isomorphism. Our precise result is that for G of odd rank, $H_2^Q(T(G))$ is isomorphic to $Z(G \times G)$ modulo relations: $(a, b) = -(b, a)$ and $(x, z) + (z, y) = (x, x + z - y) + (x + z - y, y)$. (Received February 11, 2010)