1114-57-245 **Sangbum Cho** and **Yuya Koda*** (ykoda@hiroshima-u.ac.jp). *The tree of tunnels for knots in* $S^2 \times S^1$.

We provide a certain tree $\mathcal{T}$ such that there exists a one-to-one correspondence between the set of equivalence classes of all unknotting tunnels of all tunnel number 1 knots in $S^2 \times S^1$ and a subset of the vertices of $\mathcal{T}$. In fact, this subset is exactly one of the two classes of vertices, once we regard $\mathcal{T}$ as a bipartite graph. The tree $\mathcal{T}$ is obtained by considering the action of the Goeritz group of the genus-2 Heegaard splitting of $S^2 \times S^1$ on the disk complex of the genus-2 handlebody, where the Goeritz group of a Heegaard splitting is defined to be the subgroup of the mapping class group of the Heegaard surface consisting of mapping classes that extend to both handlebodies. (Received August 28, 2015)