1145-57-311 **Ryo Ohashi*** (`ryoohashi@kings.edu`), 133 North River Street, Wilkes-Barre, PA 18711. *The finite group actions on the projective plane.* Preliminary report.

A finite G-action on a manifold M is a monomorphism $\varphi : G \to Homeo(M)$, where G is a finite group. In this talk, M is the projective plane $\mathbb{P}^2$, and our goal is to describe all possible finite G-actions on $\mathbb{P}^2$. Since the universal covering space of $\mathbb{P}^2$ is the 2-sphere $\mathbb{S}^2$, we will lift the acting group on $\mathbb{P}^2$ to $\widetilde{G}$ on $\mathbb{S}^2$.

It has been known the finite group actions on $\mathbb{S}^2$, hence we visualize the actions on $\mathbb{S}^2$ by an appropriate triangulation on it. $\widetilde{G}$ acting on $\mathbb{S}^2$ is embedded into S_n for some $n \in \mathbb{N}$, thus the triangulation on $\mathbb{S}^2$ contains n vertices and $\widetilde{G}$ permutes these vertices. This process enables us to analyze the finite G-actions on $\mathbb{P}^2$ by observing a fundamental region on $\mathbb{S}^2$ and to see the quotient spaces $\mathbb{P}^2/\varphi$.

Conversely, for a given non-orientable 2-dimensional closed orbifold, is it covered by $\mathbb{P}^2$ uniquely? The answer to this question is to look at the generators of $\widetilde{G}$. Notice all elements in $\widetilde{G}$ contain geometric and topological "DNA" in addition to algebraic information such as their order. A typical DNA is orientability or an existence of fixed point. (Received August 31, 2018)