CHAPTER 4

Conclusion

This thesis has presented new results on the suborbital graph for congruence subgroup of the extended modular group $\widehat{\mathcal{F}}_{u,n}$. We investigated the farthest vertex reaching out from any given rational $\frac{u}{n}$ in the suborbital graph $\widehat{\mathcal{F}}_{u,n}$. Moreover, we used this result to prove a property of the suborbital graph $\widehat{\mathcal{F}}_{u,n}$ that the suborbital graph $\widehat{\mathcal{F}}_{u,n}$ contains directed circuits if and only if it contains directed triangles. We also obtained new properties of the suborbital graph $\widehat{\mathcal{F}}_{u,n}$, as follows: no edge of $\widehat{\mathcal{F}}_{u,n}$ cross in $\mathbb{H}^2$ and if n is even, then $\widehat{\mathcal{F}}_{u,n}$ does not contain any directed circuit. Finally, we formed a special continued fraction together of its convergence limit point.