

CHAPTER 5 CONCLUSION AND FURTHER RESEARCH

5.1. Conclusion

Based on the findings of this study, it can be concluded that the Ti-V-Cr-Nb-Ta demonstrates strong potential for application in GFR. When implemented as a shielding, its neutronic performance closely matches that of the initial reference model, indicating that the alloy provides comparable neutron attenuation and spectrum moderation without introducing major deviations to core behavior. The results also suggest that Ti-V-Cr-Nb-Ta can be utilized in other reactor components, such as the reflector and cladding, due to some closed characteristic such as the neutron flux distribution and neutron energy spectrum however, these applications require further optimization because the k_{eff} is less than 1. Nevertheless, variations in the alloy's elemental composition within the tested range do not significantly affect the overall neutronic response, indicating that the material's performance is relatively insensitive to minor compositional adjustments.

5.2. Further Research

This study provides important insights into the neutronic behavior GFR using Ti-based alloys. Several aspects of the design and material performance remain unexplored in greater detail. These details include the thermal-hydraulics of the material and safety analysis of the reactor. It is also need to be explore for other reactors, such as MSR, LFR, and so on.