Introduction
April 1, 2024 – March 31, 2025

Progress in research and operations at the Texas A&M Cyclotron Institute is summarized in this report for the period April 1, 2024 through March 31, 2025. The CI has had a productive year and I am indebted to the dedicated operations staff that keeps the facility running. The discovery science program continues to produce exciting results as outlined in the chapters that follow. The operations continues to develop new capabilities while maintaining a high level of reliability.

The Cyclotron Institute Research Cluster On Nuclear Astrophysics (CIRCONA) was initiated with funding generously provided by the WoodNext Foundation to study nuclear reactions in stars to develop a better understanding of the chemical evolution of our universe and the vital components of life.

Dr. Jonas Karthein has joined us as an Assistant Professor of Physics and Astronomy and Dr. Baishan Hu as an Assistant Research Professor. In the coming year we anticipate Dr. Jamie Karthein will join us as an Assistant Research Professor.

Congratulations are due to the following students who completed their graduate degrees: Dr. Austin Abbott, Aster Fentress, Dr. Jenna Garcia, Dr. Emily Harris, Jaime Lopez, Dr. Zifeng Luo, Dr. Thomas Onyango, Mozhdeh Rashidazad, Dr. Stephen Robicheaux, Dr. Mike Roosa, Dr. Arjun Sengupta, Dr. Thomas Settlemyre, Dr. Maxwell Sorensen, Justin Tobar.

The Texas A&M Cyclotron Institute continues to be the world's premier facility for testing semiconductor chips for resilience to radiation, with over 4300 hours provided to 52 institutions. The third bootcamp for radiation effects testing was successfully held in March, the Cyclotron Institute, Northrop Grumman, Renesas Electronics America, NASA GSFC, NASA JPL and NASA JSC.

The faculty at the Texas A&M Cyclotron Institute continue to lead multiple multi-institutional programs including the DOE/NNSA Center of Excellence CENTAUR; the DOE Topical Theory Collaboration Heavy-Flavor Theory (HEFTY); The DOE-IP Horizon Broadening Isotope Production Pipeline Opportunities (HIPPO) program and the DOE-NP Texas Research Enhancing Nuclear Development (TREND) program.

The TREND program and the HIPPO program brought undergraduates to the cyclotron Institute for summer research. They joined with the 21st class of REU students to form the Tron Summer Scholars program.

During this period the K500 provided 5229 hours and the K150 provided 3992 hours of beam for both science and radiation-effects testing. The light-ion guide produced a beam of 105In for the first experiment using a reaccelerated radioactive beam at Texas A&M. The charge-breeding ECR (CBECR or ECR3) has also been critical in getting 64Zn25+ ions for a 47 MeV/nucleon beam for a science experiment, and an intense 15 MeV/nucleon Au beam for radiation effects studies.

Institute scientists remain active in a number of collaborative research efforts around the world. Major programs include: measurements of beta decays with the TRINAT collaboration at TRIUMF; nuclear structure measurements with TexAT at TRIUMF; the ASY-EOS collaboration at GSI; continued work with the STAR collaboration at RHIC; and participation in the SAMURAI collaboration at RIBF in Tokyo, Japan.

The format of this report follows that of previous years. Sections I through III contain reports from individual research projects. Operation and technical developments are given in Section IV. Section V lists the publications with Cyclotron Institute authors and outside users and the Appendix gives additional information including talks presented by members of the Institute during the past year. Once again, the full volume of this year's Progress in Research is available only on our web site (http://cyclotron.tamu.edu). *Since most of the contributions presented here are truly reports on progress in research, results and conclusions should not be quoted from the report without the consent of the authors*.

I am indebted to Dr. Y.-W. Lui for assembling this report.

S.J. Yennello
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