

GammaCell Project

Interim Report

May 20, 1999

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INTRODUCTION

With computing technology rapidly advancing, more complicated scientific models can be numerically evaluated. These models include the one that is being used to predict dosing distributions of samples within the Cornell Gamma Cell. One goal this semester was to integrate the gradient plot, which was developed last semester, as reported in the December 1998 report, into the program to visually see the distribution of doses. Another goal was to perform dose measurements within the cell to validate the doses calculated by the program.

ACCOMPLISHMENTS

The gradient plot developed last year was successfully modified and incorporated into the program which includes a new dialog box for selecting options when drawing the plot. Screen shots and source code changes and additions have been included in the Appendix. In addition, it was determined that the status window that displays data as it is calculated led to bad performance and was modified so that only a fixed message would be displayed when calculations are being made. This allows a far greater number of points to be calculated for the gradient plot in a reasonable amount of time, which solves one of the problems previously mentioned.

Another problem solved was the one involving Apple's implementation of Java. With the release of MRJ 2.1, which included numerous bug fixes, all the problems observed previously on the Macintosh platform disappeared.

Besides improvements on the program, a test fixture with glass tubes has been constructed to allow precise positioning a dosimeter. Using this fixture, some validation testing has been performed using two sets of source pencil configurations.

PROBLEMS

Most of the problems encountered this semester involve interpreting the data from the dose measurements performed in the cell. One major puzzle is to figure out if attenuation from the cell floor can account for the high than expected doses measured near the floor.

FUTURE WORK

More data should be collected along with statistical analysis to determine how the model should be adjusted, if at all, to correlate with the observed results. After any changes have been made to the program, a beta release to potential users should be made. Feedback from these users would help improve the program and help steer further development.

APPENDIX

Screen Shots

