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INTRODUCTION

The Standardized Computer Analysis for Licensing Evaluation (SCALE)¹ software produces a plain text output report which, depending on the particular modules executed and the user-selected options, can be of considerable length. The highlighting of important data is impaired because all text is the same size and color. Tables of data are composed of text which is aligned through the use of spaces. Although some data visualization is available via combinations of text characters, precisely plotted output can only be created with external plotting software. Locating a particular output edit can be tedious and time-consuming, and error and warning messages are scattered throughout the listing. An interface is needed to display the information in a convenient format for the user. The chosen solution is to display the code output using Hypertext Markup Language (HTML) so that the user can navigate through the data in a familiar web-type interface without the need for specialized software.

HTML OUTPUT

The choice of HTML as an advanced output format for SCALE presents several advantages over alternative output formats. HTML can be viewed in any of several modern web browsers that are freely distributed and are preinstalled on many computer systems. Most computer users are familiar with web-site navigation and require no special training to use the new output format. HTML presents a wide variety of formatting options for differing fonts, colors, and data tables. More advanced technologies such as Java applets and JavaScript are readily incorporated into the output for advanced navigation and data visualization.

Although a standard plain-text output file is still produced with each execution of the code, the user has the option to generate HTML formatted output. The ability to create the HTML output is programmed directly into the source code and the HTML pages are created simultaneously with the plain text output. The simultaneous generation of alternative output reduces the possibility of error that could be introduced with a post-process output interpreter. When the execution of the code is complete, a starting HTML page and a directory containing numerous sub-pages and other

resources are returned to the same directory as the plain text output file.

When opening the starting HTML page in a web browser, the user is presented with a list of SCALE modules that were executed. If multiple code executions were performed from a single SCALE input file, the user may choose which output listing to view.

TSUNAMI-IP

The TSUNAMI-IP code, used for sensitivity and uncertainty analysis and released in SCALE 5, is the first SCALE module to have an HTML formatted output option. An example of the TSUNAMI-IP HTML formatted output is shown in Fig. 1. When viewing TSUNAMI-IP data, the user is presented with organized lists of the input and output data and can navigate through the lists using the web browser. The input data is organized in descriptive tables. Any warning or error messages generated during the code execution are contained in a single location. The numerous output tables generated by TSUNAMI-IP are organized into easily navigated pages so that the user may quickly move from one output section to another in any order the user chooses. In TSUNAMI-IP, the user may set certain threshold criteria on the data. When these criteria are met, the data are highlighted with a unique color. In certain tables, the maximum value for a given type of data is also highlighted with a distinct color.

KENO V.A

A more advanced HTML formatted output interface for the Monte Carlo code KENO V.a is currently under development. In addition to easily navigated and color coded tables of data, interactive plotting capabilities are available. A version of the SCALE 5 data plotting code Javapeno has been developed that executes within the web browser as a Java applet. Javapeno compatible data files are created by KENO V.a so that the user may view data in colorful, interactive, and customizable plots. When development of the HTML interface is complete, data available for plotting within the HTML interface will include k_{eff} by generation, the distribution of k_{eff} values, flux spectra by region, fission and absorption rates by region, and mixed cross-section data. Fig. 2 presents an example of the KENO V.a HTML formatted output

demonstrating the use of the Javapeno applet for plotting flux data.

CONCLUSIONS

The use of HTML as an alternative output interface for SCALE codes provides the user with a convenient and familiar means of navigating and visualizing data. The continued development of HTML formatted output will provide a more convenient use of SCALE.

ACKNOWLEDGEMENTS

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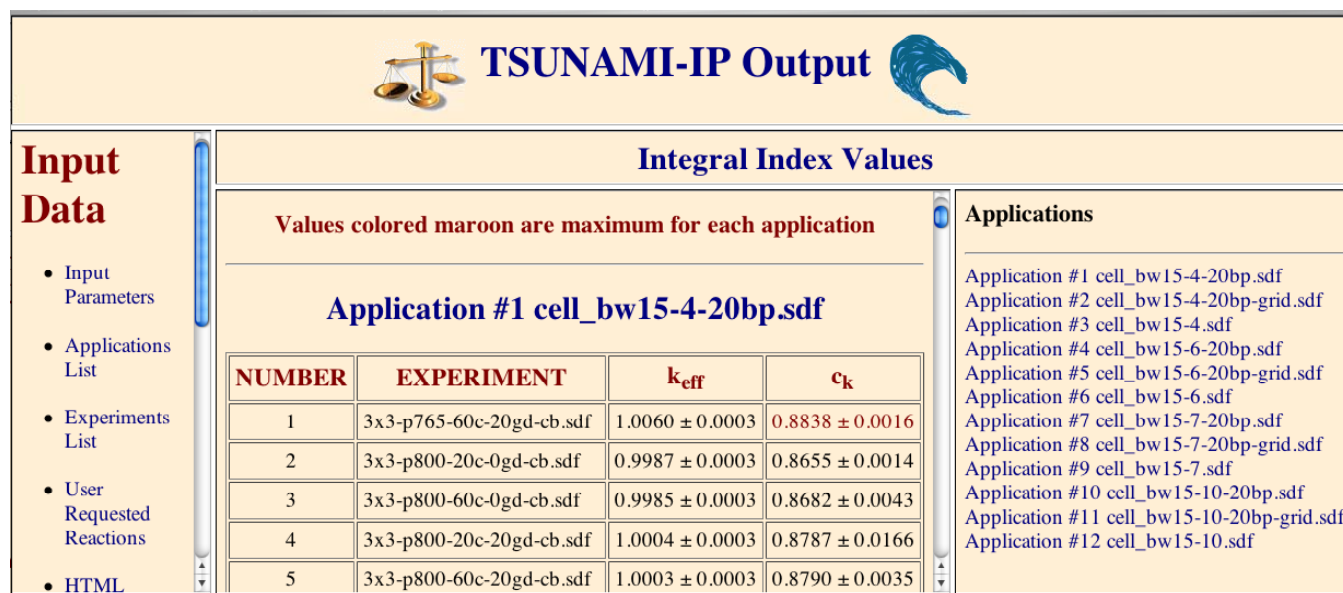


Fig. 1. Sample HTML output from TSUNAMI-IP.

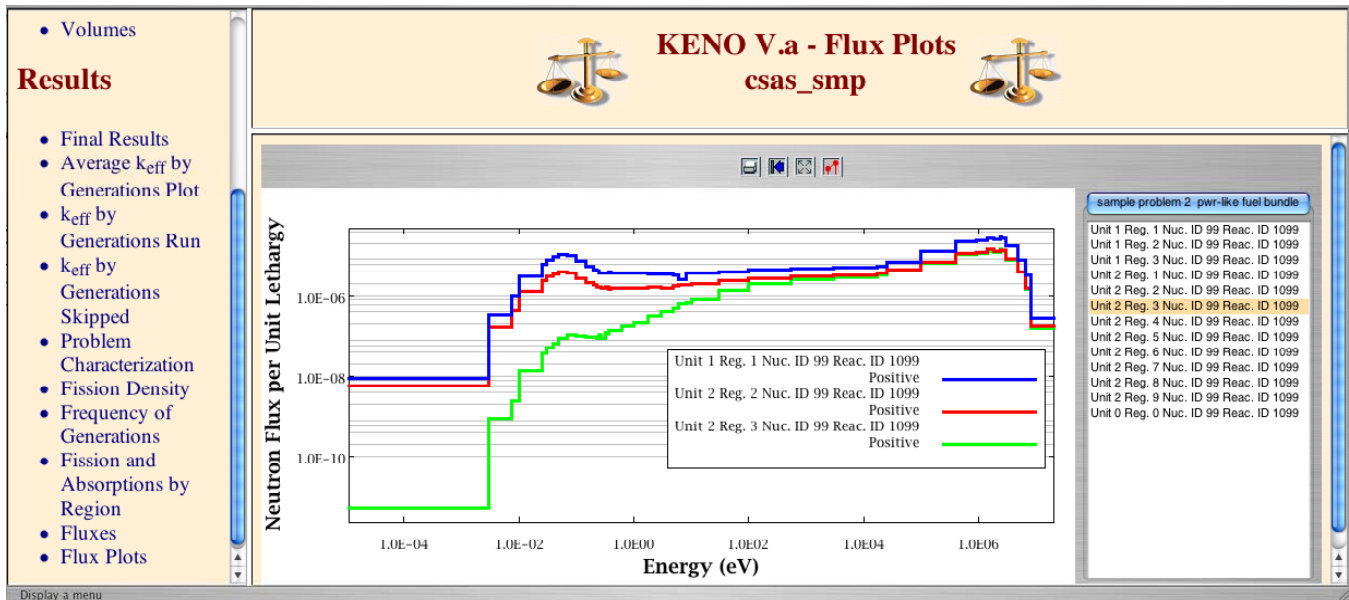


Fig. 2. Sample HTML output from KENO V.a.

REFERENCES

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