actdyn

NAME

actdyn - A Mo-99/Tc-99m activity dynamics simulator

SYNOPSIS

```
perl actdyn.pl [-i|-d] [--nofm] [--verbose] [--nopause]
```

DESCRIPTION

```
actdyn calculates and generates data of the activity dynamics of
Mo-99/Tc-99m produced via the Mo-100(g,n)Mo-99 reaction.
Parameters that can be specified via the interactive mode include:
    - Fluence data: directory name, filename rules, and beam energy range
    - Cross section data
    - Mo target materials (options: metallic Mo, MoO2, MoO3)
    - Mo-100 mass fraction
    - The beam energy for which Mo-99/Tc-99m activity dynamics data
      will be calculated
    - Average beam current
    - Time frames: time of irradiation, time of postirradiation processing,
      and time of Tc-99m generator delivery
    - The fractions of Mo-99 and Tc-99m activities
      lost during postirradiation processing
    - Tc-99m elution conditions: elution efficiency, whether to discard
      the first eluate, elution intervals, and Tc-99m generator shelf-life
The generated data files (.dat) follow the gnuplot data structure
(data block and dataset).
```

OPTIONS

```
-i
    Run on the interactive mode.

-d
    Run on the default mode.

--nofm
    The front matter will not be displayed at the beginning of the program.

--verbose (short form: --verb)
    Calculation processes will be displayed.

--nopause
    The shell will not be paused at the end of the program.
    Use it for a batch run.
```

EXAMPLES

```
perl actdyn.pl -d --nopause
perl actdyn.pl --verbose
```

REQUIREMENTS

```
Perl 5
    Excel::Writer::XLSX
PHITS
    Please note that since only licensed users are allowed to use PHITS,
    I opted not to upload PHITS-generated photon fluence files
    which are necessary to run actdyn.
    If you already have the license, please obtain T-Track files
    with axis=eng used, and name the tally files in sequential order.
    You can specify the naming rules of the fluence files and their
    directory via the interactive input.
```

SEE ALSO

actdyn on GitHub

actdyn-generated data in a paper: *Phys. Rev. Accel. Beams* **20** (2017) 104701 (Figs. 4, 5, 12, and 13)

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