HANDLING SIGNALS IN PHP

"Signals are a limited form of inter-process communication used in Unix, Unix-like, and other POSIX-compliant operating systems. A signal is an asynchronous notification sent to a process or to a specific thread within the same process in order to notify it of an event that occurred. Signals have been around since the 1970s Bell Labs Unix and have been more recently specified in the POSIX standard."

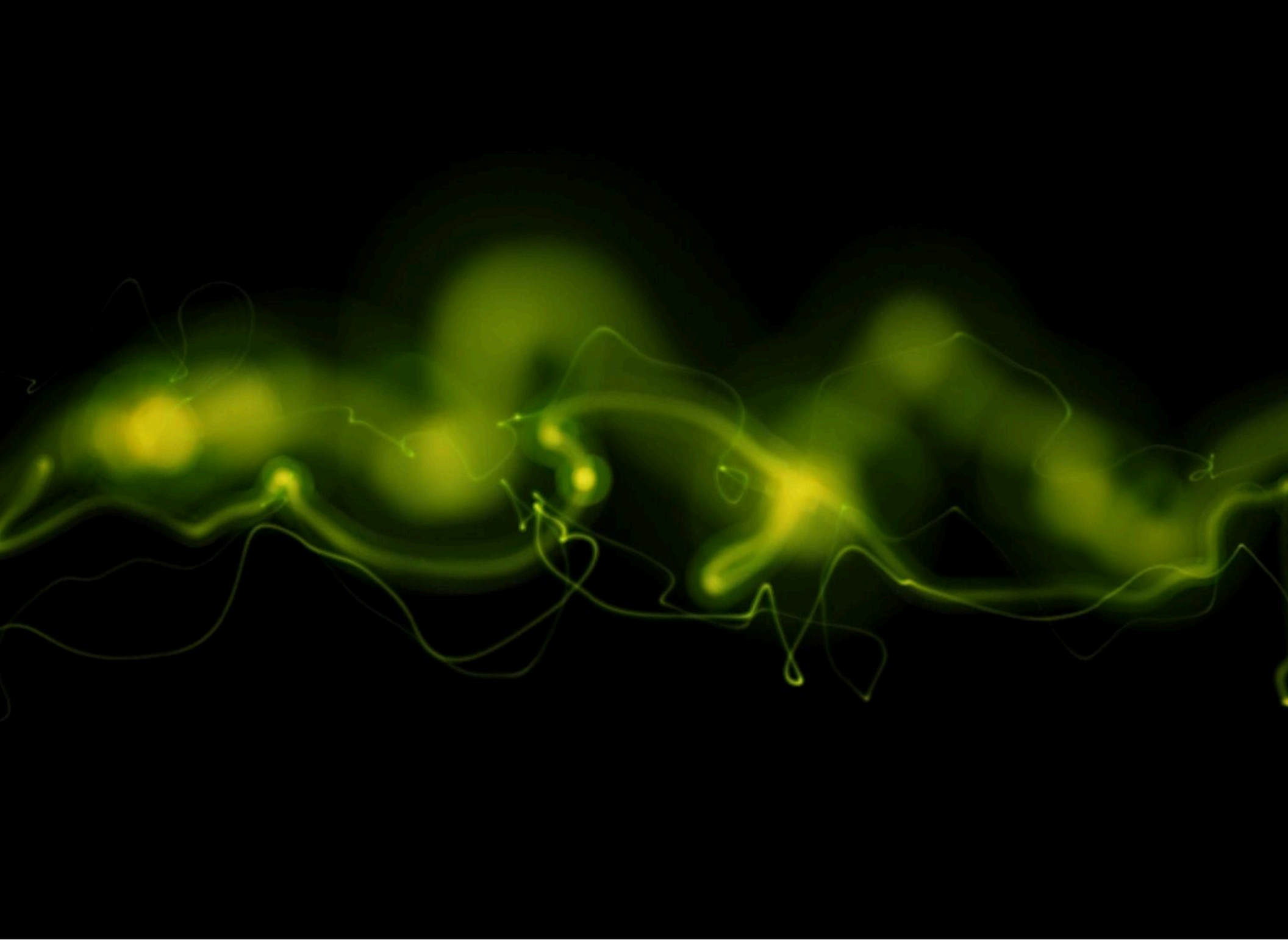
http://en.wikipedia.org/wiki/Unix_signal

"When a signal is sent, the operating system interrupts the target process's normal flow of execution to deliver the signal. Execution can be interrupted during any non-atomic instruction. If the process has previously registered a signal handler, that routine is executed. Otherwise, the default signal handler is executed."

http://en.wikipedia.org/wiki/Unix_signal

SOME KNOWN WAYS TO SEND SIGNALS

- Ctrl-C
- Ctrl-Z
- Ctrl-\
- The `kill` command



SIGNALS WE CAN CATCH IN PHP

SIGHUP
SIGINT
SIGUSR1
SIGUSR2
SIGQUIT
SIGILL
SIGABRT
SIGFPE
SIGSEGV
SIGPIPE
SIGALRM
SIGTERM
SIGCHLD
SIGCONT
SIGTSTP
SIGTTIN
SIGTTOU

TICKS

can be described as events that can happen between the normal execution of the code

```
declare(ticks = 1);

declare(ticks = 1) {
   // in scope
}
// out scope
```

"A tick is an event that occurs for every N low-level tickable statements executed by the parser within the declare block. The value for N is specified using ticks=N within the declare block's directive section.

"Not all statements are tickable. Typically, condition expressions and argument expressions are not tickable."

http://php.net/manual/en/control-structures.declare.php

TICKS

ticks set to a low value gives you much control but has a performance impact

ticks set to a high value give you less control but impact performance less

ALTERNATIVE

You can manually set in your code when the signals can be handled

```
pcntl_signal_dispatch();
```

SIGNAL HANDLER

```
pcntl_signal(SIGNAL, 'signalhandler');

function signalhandler($signal) {
    echo 'Caught a signal';
    return;
}
```

HANDLING A SIGNAL (TICKS)

```php
<?php

declare(ticks = 1);

pcntl_signal(SIGINT, 'signalhandler');

function signalhandler($signal)
{
    echo 'Caught signal ' . $signal . PHP_EOL;
    return;
}

// keep on running so we can actually send a signal ;)
while (true) {
}
```

HANDLING A SIGNAL (DISPATCH)

```php
<?php

pcntl_signal(SIGINT, 'signalhandler');

function signalhandler($signal)
{
    echo 'Caught signal ' . $signal . PHP_EOL;
    return;
}

// keep on running so we can actually send a signal ;)
while (true) {
    pcntl_signal_dispatch();
}
```

WOW THAT'S SOME NASTY CODE

INTERESTING USECASE: ALARMS

We can send the SIGALRM signal from within our script

Could be a very nice trick to show progress

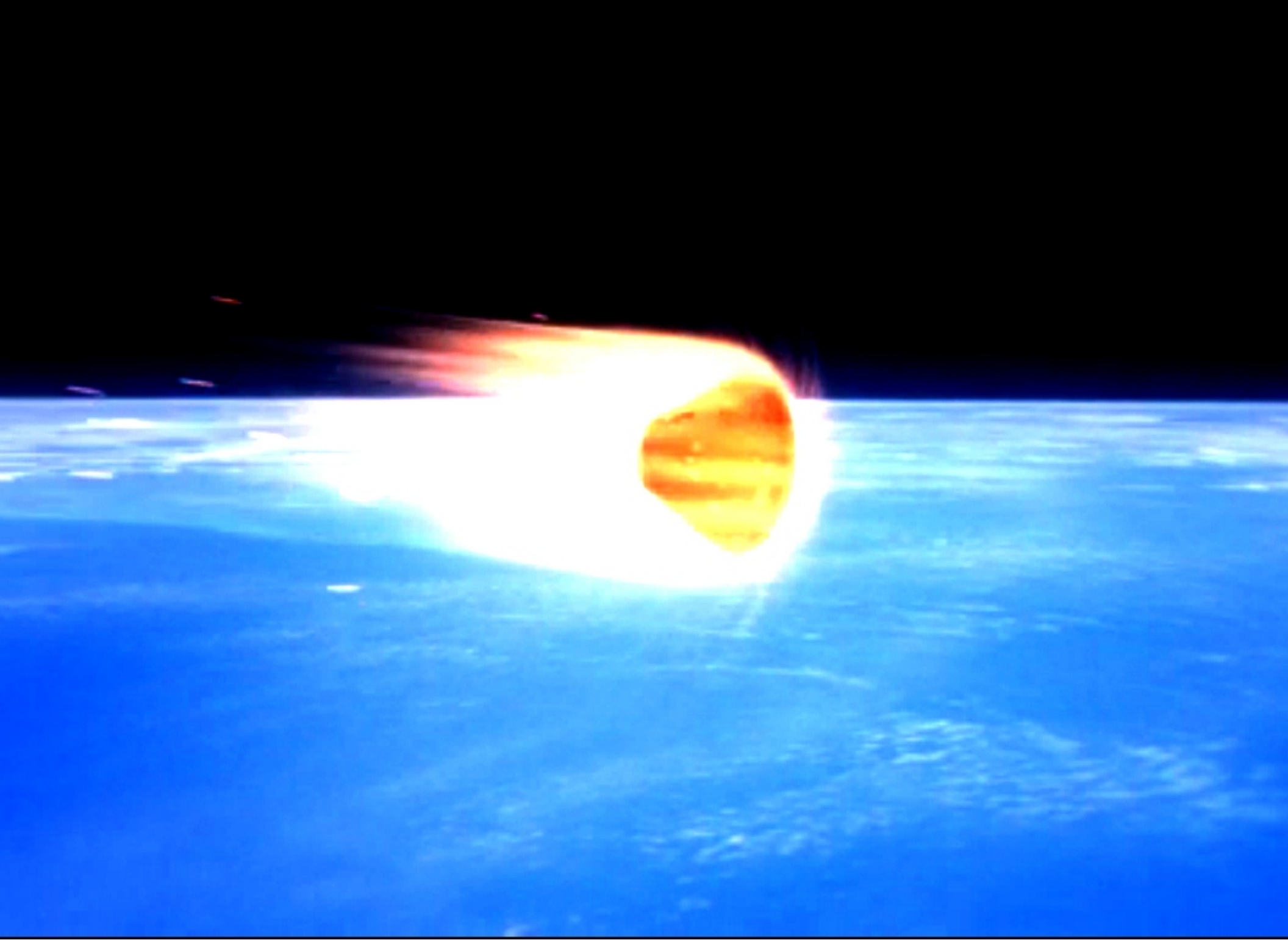
```
pcntl_alarm(interval);
```

ALARM !

```php
<?php

declare(ticks = 1);

pcntl_signal(SIGALRM, 'alarmhandler');
pcntl_alarm(5); // SIGALRM after 5 seconds

function alarmhandler($signal)
{
    echo "Alarm !" . PHP_EOL;
    echo "Periodic progress output ?" . PHP_EOL;
    pcntl_alarm(5); // we want it every 5 seconds so set again
    return;
}

// keep on running so we can actually send a signal ;)
while (true) {
}
```

EXTRA SIGNAL FUNCTIONALITY

pcntl_sigprocmask (un)block specific signals
pcntl_sigwaitinfo suspend execution until a set of signals is received
pcntl_sigtimedwait suspend execution and wait for signals with timeout



WHY WOULD WE USE THIS ?

report progress
reload configuration
periodic reload to free resources
...

THANKS.

https://joind.in/14176

IKE DEVOLDER

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Senior Webdeveloper - Studio Emma

Archlinux Trusted User

CREDITS

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SAMPLES

handling signals in php samples