

src/abichromatogram

April 28, 2025

Contents

This module provides functionality to generate SVG chromatograms from ABIF trace files. It renders the four fluorescence channels with base calls in a visual format that resembles the output of DNA sequencing instruments. Command-line usage:

```
abichromatogram <trace_file.ab1> [options]
```

Options:

-o, --output FILE Output SVG file (default: chromatogram.svg)
-w, --width WIDTH SVG width in pixels (default: 1200)
--height HEIGHT SVG height in pixels (default: 600)
-s, --start POS Start position (default: 0)
-e, --end POS End position (default: whole trace)
-d, --downsample FACTOR Downsample factor for visualization (default: 1)
--hide-bases Hide base calls
--debug Show debug information
-h, --help Show this help message and exit
-v, --version Show version information and exit

Example usage:

```
# Generate a chromatogram from a trace file
abichromatogram input.ab1 -o output.svg

# Generate a zoomed view of a specific region with downsampling
abichromatogram input.ab1 -s 500 -e 1000 -d 5
```

1 Imports

abif

2 Types

```
Channel = enum
    A = "A", C = "C", G = "G", T = "T"
```

The four channels used in capillary electrophoresis

```
TraceData = object
    points*: seq[TraceDataPoint] ## Processed trace data points
    baseOrder*: string           ## Order of bases in channels (e.g., "ACGT")
    peaks*: seq[int]             ## Base call peak positions
    sequence*: string            ## Called sequence
    traceLen*: int               ## Total length of trace in data points
    baseColors*: Table[Channel, string] ## Color mapping for each nucleotide base
```

Processed trace data ready for visualization

```
TraceDataPoint = object  
  position*: int          ## X position (scan number)  
  values*: Table[Channel, int] ## Intensity value for each channel (scaled 0-1000)
```

A single data point in the trace with values for each channel