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$$F(a, b) = \frac{1}{\sqrt{a}} \int_{-\infty}^{+\infty} f(t) \psi^* \left( \frac{t-b}{a} \right) dt$$

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# Introduction to PyWavelets

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## Objective

- introduce briefly the PyWavelets library, mainly its main features, documentation and release source

## 1. What is PyWavelets

[PyWavelets \(https://github.com/PyWavelets/pywt\)](https://github.com/PyWavelets/pywt) is a free Open Source library for wavelet transforms in Python, which is released under the MIT license.

The main features of PyWavelets are:

- 1D, 2D and nD Forward and Inverse Discrete Wavelet Transform (DWT and IDWT)
- 1D, 2D and nD Multilevel DWT and IDWT
- 1D and 2D Stationary Wavelet Transform (Undecimated Wavelet Transform)
- 1D and 2D Wavelet Packet decomposition and reconstruction
- 1D Continuous Wavelet Transform
- Computing Approximations of wavelet and scaling functions
- Over 100 built-in wavelet filters and support for custom wavelets
- Single and double precision calculations
- Real and complex calculations
- Results compatible with Matlab Wavelet Toolbox (TM)

## 2. Documentation

Documentation with detailed examples and links to more resources is available online at <http://pywavelets.readthedocs.org> (<http://pywavelets.readthedocs.org>).

### 3. Release Sources

- The latest release: [PyPI](https://pypi.org/project/PyWavelets/) (<https://pypi.org/project/PyWavelets/>)
- The source releases: [the Releases Page](https://github.com/PyWavelets/pywt/releases) (<https://github.com/PyWavelets/pywt/releases>)