

Perpendicular, Rotational and Fractal Integrals

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1 Introduction

$$\begin{array}{c}
 \uparrow \\
 \underbrace{\hspace{1.5cm}}_N \\
 \emptyset_1 \uparrow \mathcal{V}^{\infty \mathcal{V}} \left(\overbrace{\dots, \dots \rightarrow \dots \dots}^{N} \right) d\vec{N} \left(\overbrace{\dots \dots \dots \downarrow \dots \dots}^{\bar{N}} \right) d\vec{\bar{N}} \\
 \uparrow \\
 \underbrace{\hspace{1.5cm}}_N \\
 \emptyset_1 \uparrow \mathcal{V}^{\infty \mathcal{V}} \left(\overbrace{\dots, N \rightarrow \dots \bar{N}}^{N} \right) d\vec{N} \left(\overbrace{\dots \bar{N} \dots \downarrow \dots N}^{\bar{N}} \right) d\vec{\bar{N}} \\
 \uparrow \\
 \underbrace{\hspace{1.5cm}}_N
 \end{array}$$

But the result of application is not good as it may look:

In this result, the first line of `i/code_i/code_i` is NOT properly distributed over two lines as expected. `i/code_i/code_i` for making dot causes not satisfactory result. Omit of it does not show the support of proper line distribution over two lines.

There is a possibility of incrementing the `i/code_i/code_i` of the code, but this causes a shift toward the right side for the complete `i/code_i/code_i`, if it combines into single line.

`i/code_i/article mathtools,amssymb` Traditional form:

$$\begin{array}{c}
 \uparrow \\
 \underbrace{\hspace{1.5cm}}_N \\
 \emptyset_1 \uparrow \mathcal{V}^{\infty \mathcal{V}} \left(\overbrace{\dots, \cdot N \rightarrow \dots \cdot \bar{N}}^{N} \right) d\vec{N} \left(\overbrace{\dots \cdot \bar{N} \dots \downarrow \dots \cdot N}^{\bar{N}} \right) d\vec{\bar{N}} \\
 \uparrow \\
 \underbrace{\hspace{1.5cm}}_{\bar{N}}
 \end{array}$$

Desired result:

$$\emptyset_1 \uparrow \mathbb{V}^{\infty \mathbb{V}} \left\{ \overbrace{(\dots, \cdot N \rightarrow \dots \cdot \overline{N})}^{\uparrow_N} \underbrace{(\dots \cdot \overline{N} \dots \downarrow \dots \cdot N)}_{\uparrow_{\overline{N}}} \right\} d\vec{N} d\vec{\overline{N}}$$

Rotational form: `\usepackage{mathtools,amssymb}` Traditional form:

$$\emptyset_1 \uparrow \mathbb{V}^{\infty \mathbb{V}} \overbrace{(\dots, \cdot N \rightarrow \dots \cdot \overline{N})}^{\uparrow_N} d\vec{N} \underbrace{(\dots \cdot \overline{N} \dots \downarrow \dots \cdot N)}_{\uparrow_{\overline{N}}} d\vec{\overline{N}}$$

Desired result:

$$\emptyset_1 \uparrow \mathbb{V}^{\infty \mathbb{V}} \left\{ \overbrace{(\dots, \cdot N \rightarrow \dots \cdot \overline{N})}^{\uparrow_N} \underbrace{(\dots \cdot \overline{N} \dots \downarrow \dots \cdot N)}_{\uparrow_{\overline{N}}} \right\} d\vec{N} d\vec{\overline{N}}$$

The form of a fractal integral is

$$\emptyset_1 \uparrow \mathbb{V}^{\infty \mathbb{V}} \left\{ \overbrace{(\dots, \cdot N \text{overset{\scriptsize \rightarrow}{\rightarrow} \dots \cdot \overline{N})}^{\uparrow_N} \underbrace{(\dots \cdot \overline{N} \dots \downarrow \dots \cdot N)}_{\uparrow_{\overline{N}}} \right\} \\ \times \overbrace{\left\{ \sin \theta \star \sum_{[n] \star [l] \rightarrow \infty \cdot V \text{ and } U,} \left(\frac{b^{\mu-\zeta}}{\sqrt[n]{n^m - l^m}} \otimes \prod_{\Lambda} h \right) - \cos \psi \diamond \theta \right\}}^{\uparrow_E} d\vec{N} d\vec{\overline{N}}$$

The fractal integral can be used to calculate the values of the Mandelbrot set. For example, we can calculate the integral for the coordinates (z_0, z_1, \dots) of the Mandelbrot set as follows:

$$\begin{array}{c}
\left\{ \begin{array}{c} \uparrow \\ \underbrace{\hspace{1.5cm}}_{\mathbf{N}} \\ (\cdots, \cdot z_0 \rightarrow \cdots \cdot z_n) \underbrace{(\cdots \cdot z_n \cdots \downarrow \cdots \cdot z_0)}_{\overline{\mathbf{N}}} \end{array} \right\} \\
\uparrow \underbrace{\hspace{1.5cm}}_{\mathbf{E}} \\
\times \left\{ \sin \theta \star \sum_{[n] \star [l] \rightarrow \infty V \text{ and } U,} \left(\frac{1}{z_n - z_l \tilde{\star} \mathcal{R}} \otimes \prod_{\Lambda} h \right) - \cos \psi \diamond \theta \right\} d\vec{\mathbf{N}} d\vec{\overline{\mathbf{N}}} \quad \text{The} \\
\text{resulting value of the fractal integral will be a measure of the intensity of the} \\
\text{Mandelbrot set at the coordinates} \quad (z_0, z_1, \dots) \quad .
\end{array}$$