The FORSYDE system which performs the the Fast Fourier Transform can be defined in terms of atoms as:

$$\text{fft}_S \ k \ vs = \text{bitrev}_S((stage \diamond kern) \diamond vs) \tag{1}$$

where the constructors

$$stage \ wdt = \text{concat}_S \circ (segment \diamond twiddles) \circ \text{group}_S \ wdt \tag{2}$$

$$segment \ t = \text{unduals}_S \circ (butterfly \ t \ \oslash) \circ \text{duals}_S \tag{3}$$

$$butterfly \ w = ((\lambda \ x_0 \ x_1 \rightarrow x_0 + wx_1, x_0 - wx_1) \ \triangle) \oplus \tag{4}$$

are aided by the number generators

$$kern = \text{iterate}_S \ (\times 2) \ 2 \tag{5}$$

$$twiddles = (\text{reverse}_S \circ \text{bitrev}_S \circ \text{take}_S \ (\text{lgth}_S \ vs/2))(wgen \diamond \langle 1..\rangle) \tag{6}$$

$$wgen \ x = -\frac{2\pi(x-1)}{\text{lgth}_S \ vs} \tag{7}$$