we obtain

$$\boldsymbol{C} = c_1 \frac{d+1}{d} \begin{pmatrix} 1 & 0 & \cdots & 0 \\ 0 & \ddots & \ddots & \vdots \\ \vdots & \ddots & \ddots & 0 \\ 0 & \cdots & 0 & 1 \end{pmatrix} . \tag{B.20}$$

Thus, we have not only proven that transport properties are isotropic on the hyperdiamond lattice in the long-wavelength limit[2] for any dimension d, but also constructed a simple algorithm for the computation provided that the corresponding quantity can be computed for the model in $d+1$ dimensions as defined by (B.12). Numerical results for transport related quantities of the hd lattice can be found in subsection 4.5.2.

[2]Note that for the honeycomb lattice the isotropy also follows from the simultaneous presence of mirror symmetries $x \to -x$, $y \to -y$ through the center of a bond in x or y direction and the rotational symmetry $(x, y) \to (x \cos(2\pi/n) + y \sin(2\pi/n))$ with $n > 2$ (here $n = 3$).