

```
In[1]:= SetDirectory["~/Factorisation/"];
      << kappaLib.m
      << helper.m
```

KappaLib v1.1

Loading helper.m..

■ Compute determinants of mediums in Theorem 2.1

■ Metaclass I:

```
In[4]:= kappa = emMatrixToKappa [
```

$$\begin{pmatrix} a_1 & 0 & 0 & -b_1 & 0 & 0 \\ 0 & a_2 & 0 & 0 & -b_2 & 0 \\ 0 & 0 & a_3 & 0 & 0 & -b_3 \\ b_1 & 0 & 0 & a_1 & 0 & 0 \\ 0 & b_2 & 0 & 0 & a_2 & 0 \\ 0 & 0 & b_3 & 0 & 0 & a_3 \end{pmatrix};$$

```
In[5]:= emDet[kappa] // Simplify
```

```
Out[5]= (a12 + b12) (a22 + b22) (a32 + b32)
```

■ Metaclass II

```
In[6]:= kappa = emMatrixToKappa [
```

$$\begin{pmatrix} a_1 & -b_1 & 0 & 0 & 0 & 0 \\ b_1 & a_1 & 0 & 0 & 0 & 0 \\ 0 & 0 & a_2 & 0 & 0 & -b_2 \\ 0 & 1 & 0 & a_1 & b_1 & 0 \\ 1 & 0 & 0 & -b_1 & a_1 & 0 \\ 0 & 0 & b_2 & 0 & 0 & a_2 \end{pmatrix};$$

```
In[7]:= emDet[kappa] // Simplify
```

```
Out[7]= (a12 + b12)2 (a22 + b22)
```

■ Metaclass IV:

```
In[8]:= kappa = emMatrixToKappa [
```

$$\begin{pmatrix} a_1 & 0 & 0 & -b_1 & 0 & 0 \\ 0 & a_2 & 0 & 0 & -b_2 & 0 \\ 0 & 0 & a_3 & 0 & 0 & a_4 \\ b_1 & 0 & 0 & a_1 & 0 & 0 \\ 0 & b_2 & 0 & 0 & a_2 & 0 \\ 0 & 0 & a_4 & 0 & 0 & a_3 \end{pmatrix};$$

```
In[9]:= emDet[kappa] // Simplify
```

```
Out[9]= (a32 - a42) (a12 + b12) (a22 + b22)
```

```
In[10]:= printNotebook["Determinants.pdf"]
```