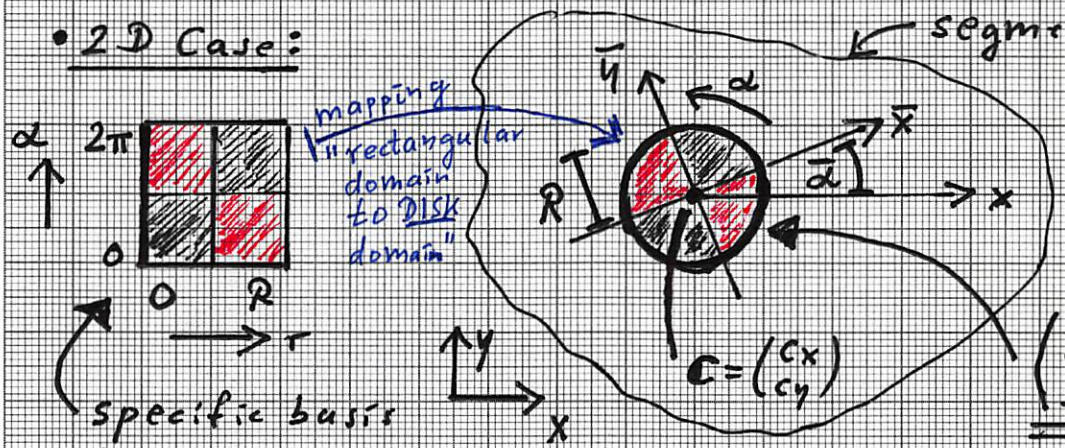
Stratovan

■ HAAR WAVELETS - SUMMARY OF 2D AND 3D CASES

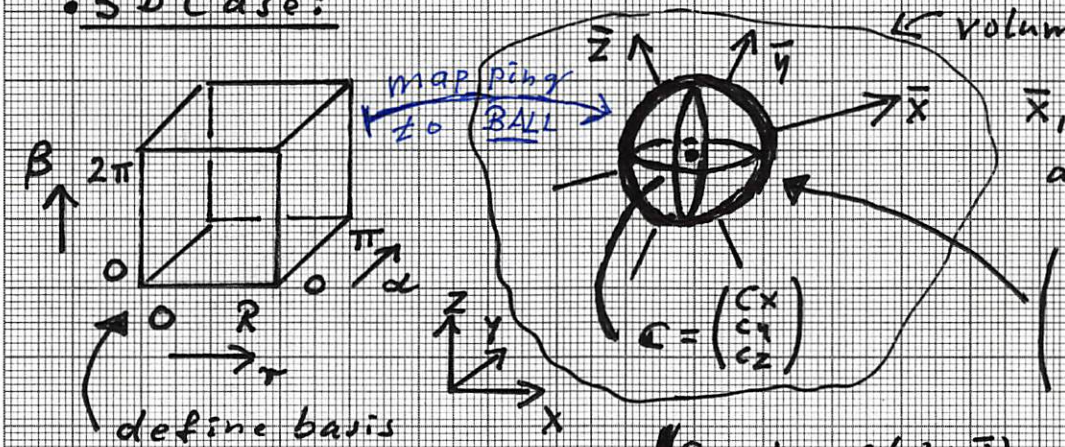
• 2D Case:



$$\begin{pmatrix} x \\ y \\ f \end{pmatrix} = \begin{pmatrix} x(r,\alpha) \\ y(r,\alpha) \\ f(r,\alpha) \end{pmatrix}$$

$$= \begin{pmatrix} c_x + r\,c(\alpha+\bar{\alpha}) \\ c_y + r\,s(\alpha+\bar{\alpha}) \\ f(r,\alpha) \end{pmatrix}$$

• 3D Case:



$$\begin{pmatrix} x \\ y \\ z \\ f \end{pmatrix} = \begin{pmatrix} x(r,\alpha,\beta) \\ y(r,\alpha,\beta) \\ z(r,\alpha,\beta) \\ f(r,\alpha,\beta) \end{pmatrix}$$

$$= \begin{pmatrix} c_x + r\,c(\alpha+\bar{\alpha}) \\ c_y + r\,\{s(\alpha+\bar{\alpha})\,c(\beta+\bar{\beta})\} \\ c_z + r\,(s(\alpha+\bar{\alpha})\,s(\beta+\bar{\beta})) \\ f(r,\alpha,\beta) \end{pmatrix} \} \circledast$$

$\circledast$ Rotation of semi-disk in $\bar{x}\bar{y}$-plane by 2π around $\bar{x}$-axis

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• NOTES: 1) Instead of a polar map, consider using a LOG-POLAR map - or an area-/volume-preserving map.

2) Consider CUBIC B-spline wavelets.

BH

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