Relative Orbitals Integrals

We have worked in the "spectral-side". Now we work on the "geometric side". (Using algebraic geometry ?

Algebraic groups. Let G be an algebraic group over a field F.

- (Points P.O.V) Given a R a F-algebra; then

$$R \longmapsto G(R) = \mathrm{Hom}_F(F[G], R)$$

Rmk "Yoneda Lemma" says that the R-points for every R caracterize G.

e.g. i) $X := \mathrm{Spec}\left(\mathbb{R}[X,Y]/_{X^2+Y^2+1} \right)$.

- $X(\mathbb{C}) \simeq \{ (z_1, z_2) / z_1^2 + z_2^2 + 1 = 0 \}$
- $X(\mathbb{R}) = \phi$

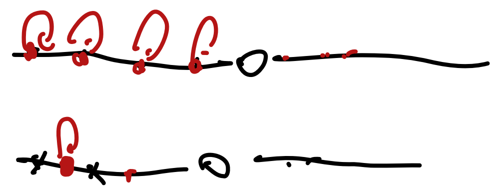
ii) $$Y = \mathrm{Spec}\left(\mathbb{R}[x,y]/_{xy-1}\right)$$

- $Y(\mathbb{C}) \simeq \{(z_1,z_2) : z_1 z_2 = 1\} \simeq \mathbb{C}^\times$
- $Y(\mathbb{R}) \simeq \mathbb{R}^\times$

Visual closed points

$X =$

$Y =$



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Suppose that R is a locally compact ring, then we can endow G.

- $\mathbb{A}^n_F(R) = R^n \rightsquigarrow$ Product topology.

- $G \xhookrightarrow{\text{closed}} \mathbb{A}^N_F \rightsquigarrow G(\mathbb{A}_F) \subset R^N$ induced topology.