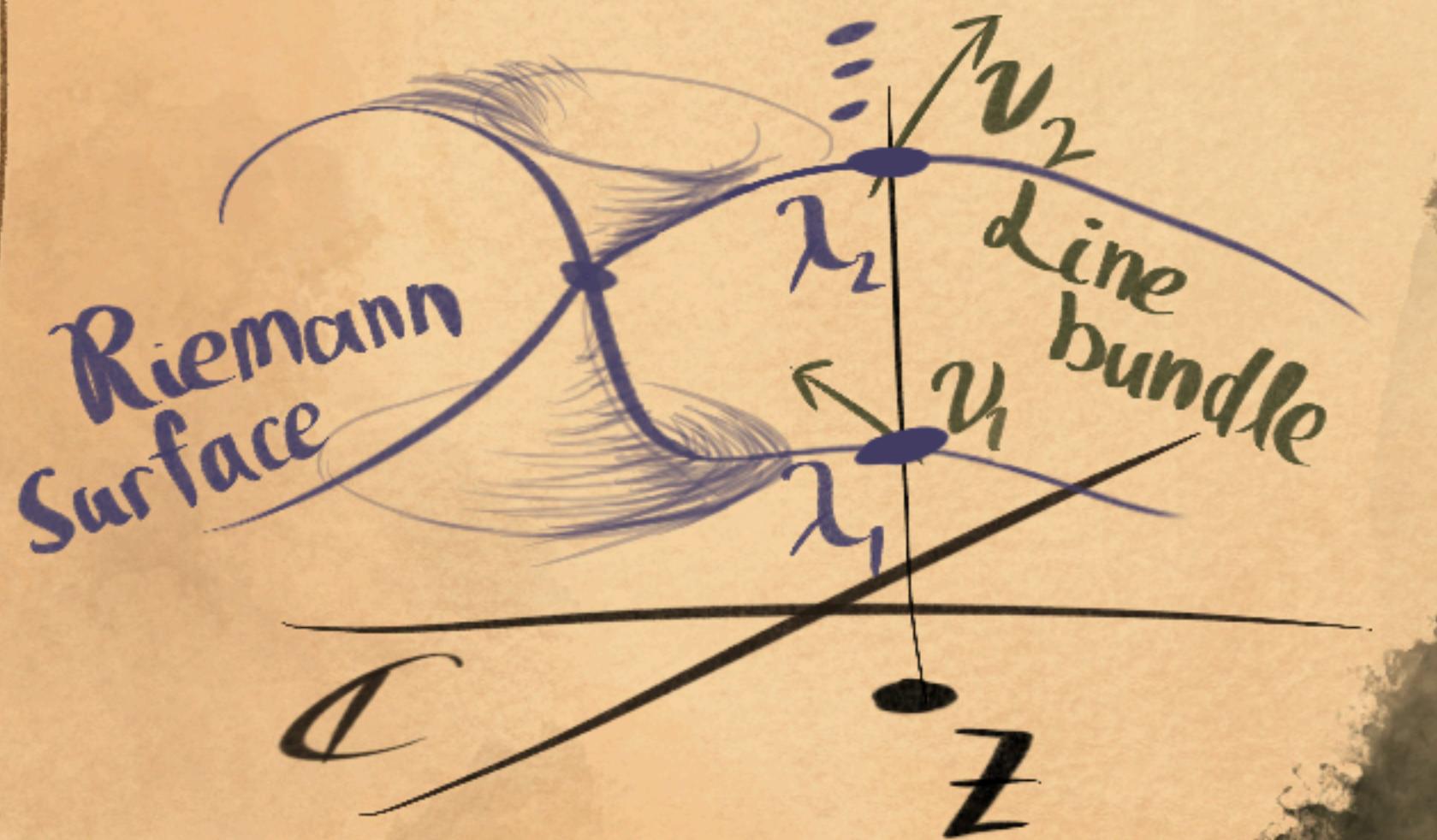
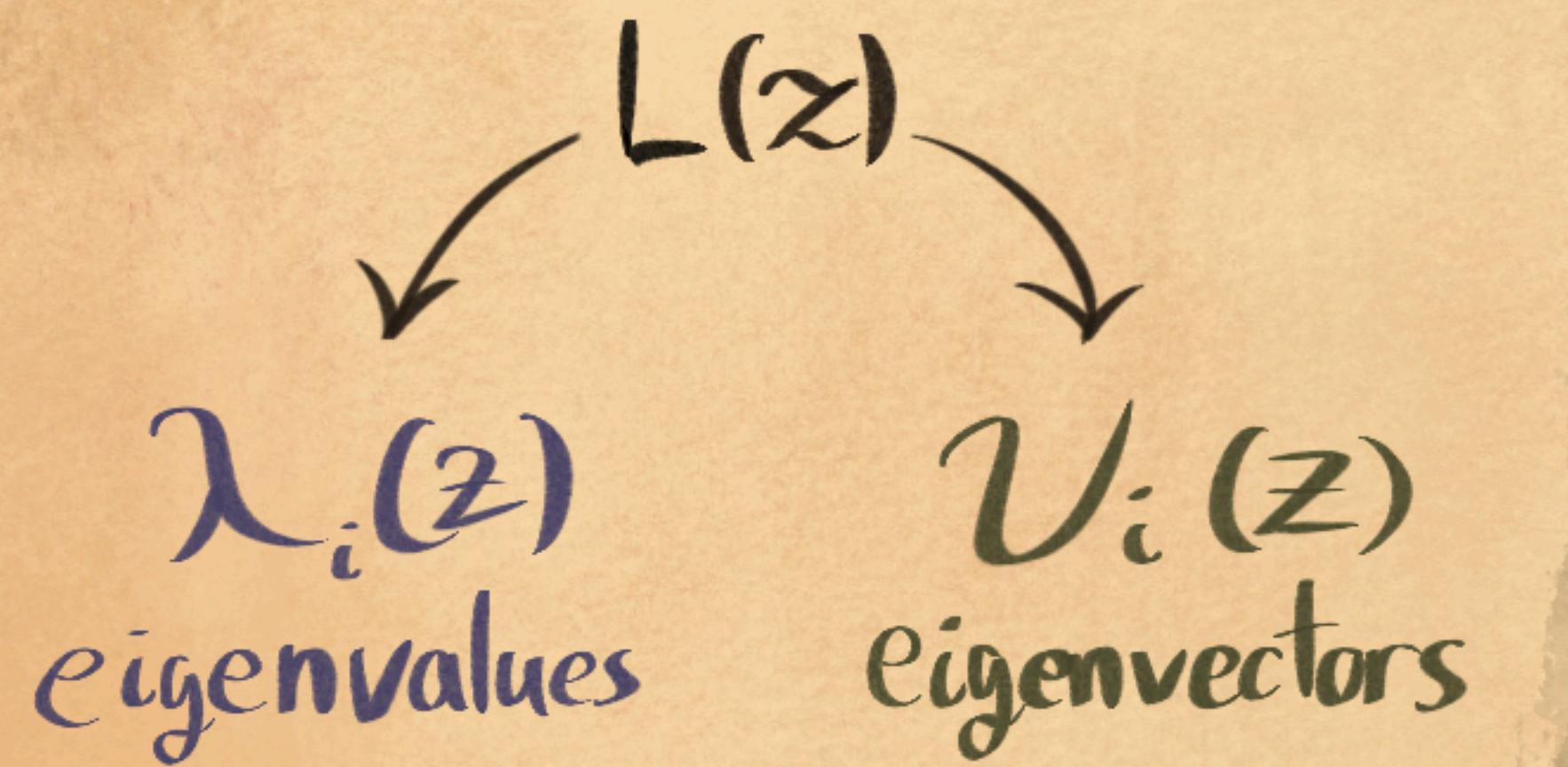


Spectral Curve

matrix of polynomials



$N=2$ toda $\Rightarrow L(z) 2 \times 2$

spectral curve $\det(\lambda - L(z)) = 0 \Rightarrow \lambda^2 = f(z)$

Hyperelliptic curve

toda: $f(z) = z(z-1)(z+1) \quad \lambda \in \mathbb{C}$

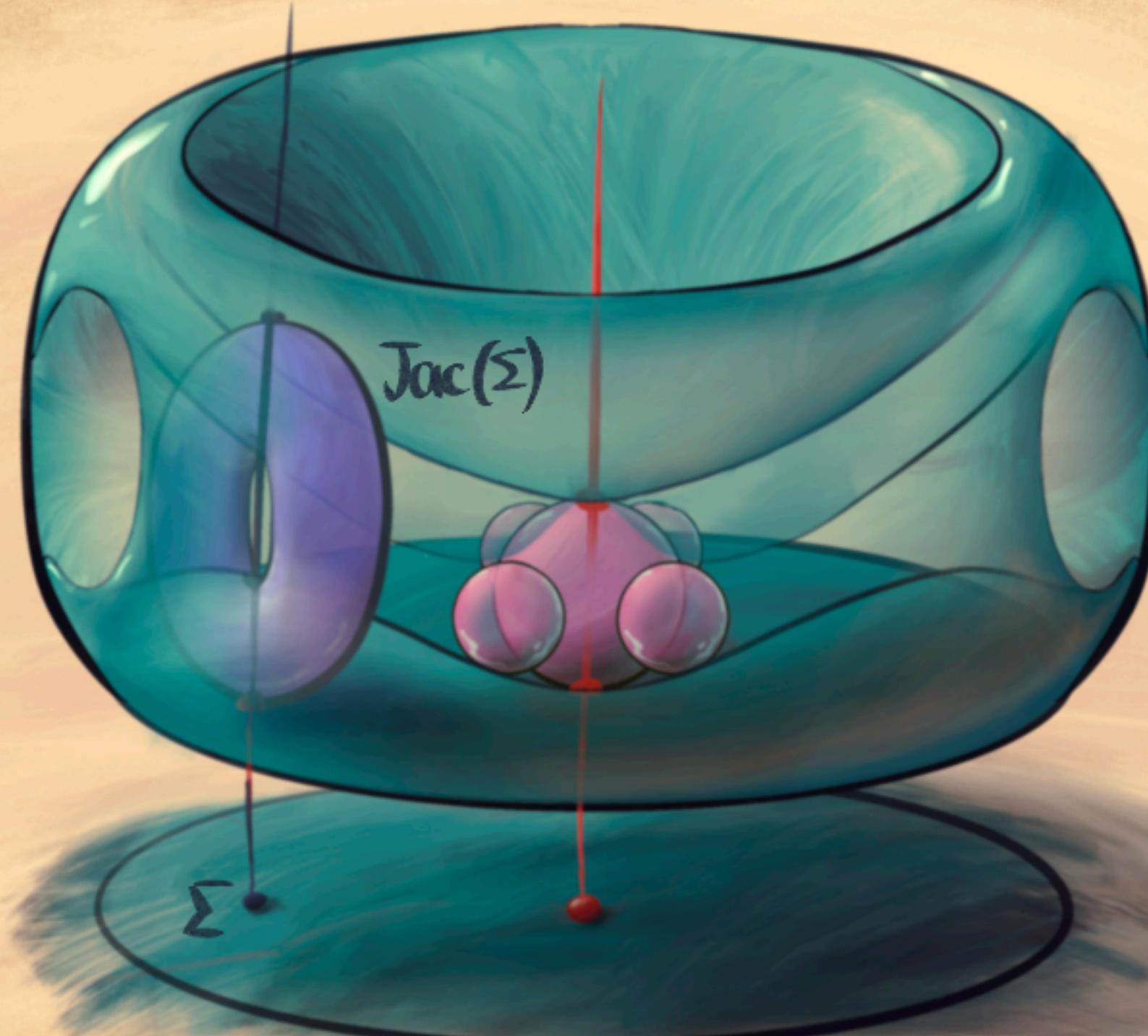
spectral curve = conserved quantity

genus g curve

Defined by
2g-1 roots



fiber for spectral curve Σ :
space of line bundles $Jac(\Sigma)$
line bundle \approx choice of phase around loops in Σ
 $Jac(\Sigma) \cong \text{Hom}(\pi_1(\Sigma), U(1)) \cong U(1)^{\frac{g-1}{2}}$, a torus!
flow linear on $Jac(\Sigma)$!



Lagrangian torus fibration!