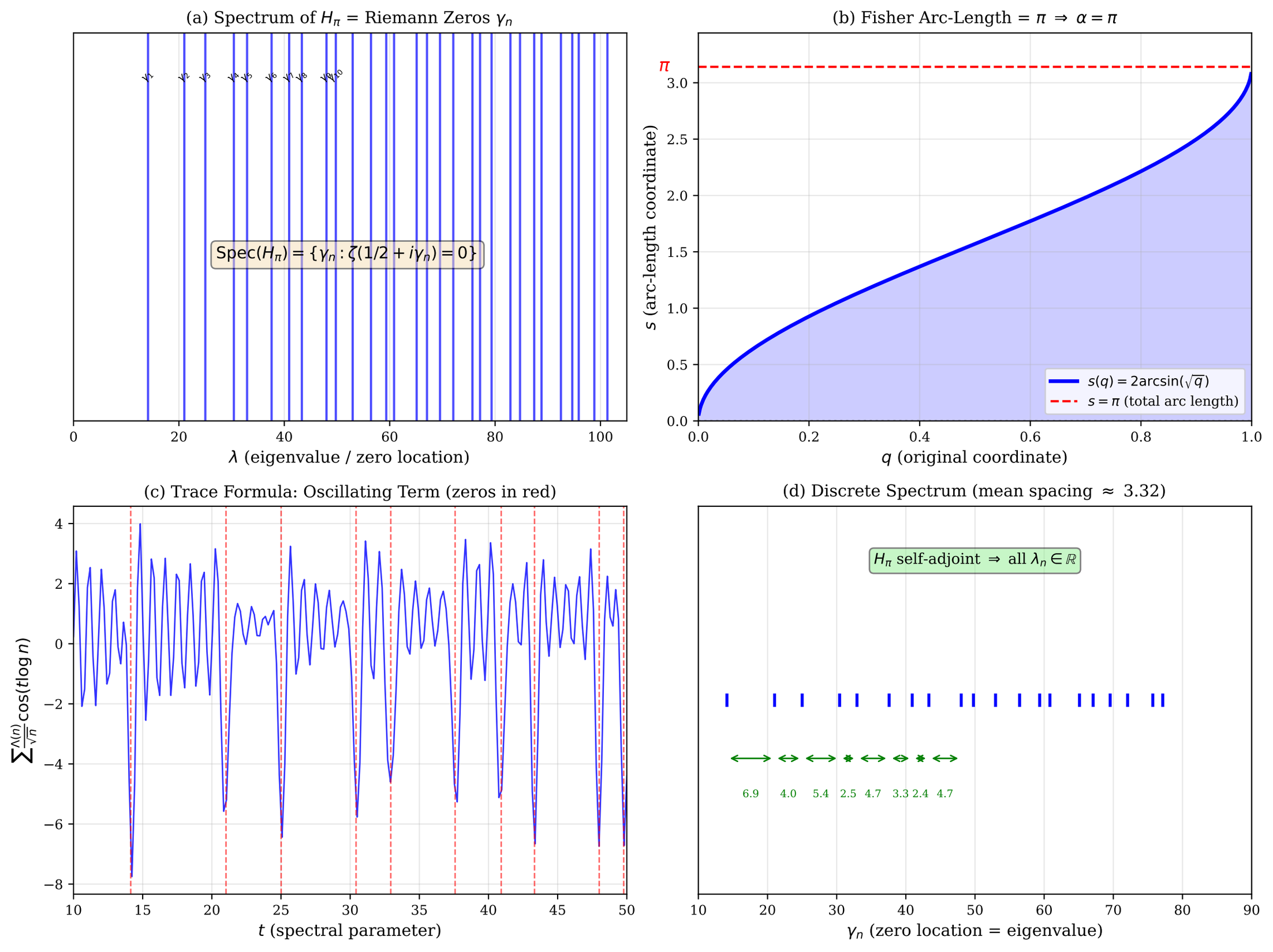
(a) Spectrum of H_π = Riemann Zeros γ_n
γ_1 γ_2 γ_3 γ_4 γ_5 γ_6 γ_7 γ_8 γ_9 γ_{10}
$\mathrm{Spec}(H_\pi) = \{\gamma_n : \zeta(1/2 + i\gamma_n) = 0\}$
0 20 40 60 80 100
λ (eigenvalue / zero location)
(b) Fisher Arc-Length = $\pi \Rightarrow \alpha = \pi$
π
s (arc-length coordinate)
0.0 0.5 1.0 1.5 2.0 2.5 3.0
$s(q) = 2\arcsin(\sqrt{q})$
$s = \pi$ (total arc length)
0.0 0.2 0.4 0.6 0.8 1.0
q (original coordinate)
(c) Trace Formula: Oscillating Term (zeros in red)
$\sum \frac{\Lambda(n)}{\sqrt{n}} \cos(t \log n)$
4 2 0 −2 −4 −6 −8
10 15 20 25 30 35 40 45 50
t (spectral parameter)
(d) Discrete Spectrum (mean spacing $\approx$ 3.32)
H_π self-adjoint $\Rightarrow$ all $\lambda_n \in \mathbb{R}$
6.9 4.0 5.4 2.5 4.7 3.3 2.4 4.7
10 20 30 40 50 60 70 80 90
γ_n (zero location = eigenvalue)