Alright, we roll straight into **Blueprint v2: API / Implementation Plan.**
This is the “how do I actually build this thing in code?” layer.
I’ll keep it tight and structured so you can drop it into a repo when you feel like it.

# 1. Project Layout

Target name (up to you):
projex_x_young or ziltrit_aeon_young
Suggested package structure:
projex_x_young/ ├── __init__.py ├── config.py ├── symbols/ # Ziltrit, runes, etc. │ ├── __init__.py │ ├── glyph_table.py │ └── encoder.py ├── geometry/ # AEON torus, coils │ ├── __init__.py │ ├── torus.py │ └── deformations.py ├── physics/ # Young, waves, elasticity │ ├── __init__.py │ ├── waves.py │ └── elasticity.py ├── modes/ # Unified Everything Formula logic │ ├── __init__.py

│ ├── selectors.py │ └── sequences.py ├── interference/ # Solvers, scoring, maps │ ├── __init__.py │ ├── field_solver.py │ └── scoring.py ├── cipher/ # Kryptos/Cicada/Voynich bridge │ ├── __init__.py │ ├── parser.py │ ├── candidates.py │ └── ranking.py ├── viz/ # Plots, 3D, exports │ ├── __init__.py │ └── plots.py └── scripts/ └── demo_pipeline.py

# 2. Core Data Structures

## 2.1 Symbol / Glyph

from dataclasses import dataclass from typing import Optional @dataclass class GlyphParams: name: str # e.g. 'Z1', 'Ψ', etc. index: int # i prime: int # p angle_rad: float # θ layer: int # inner/mid/outer spiral_sign: int # +1 / −1 deformation_type: str # 'bend', 'twist', 'shear'

## 2.2 Mode (wave mode from

# Unified Everything rules)

@dataclass class Mode: n: int # θ harmonic index m: int # φ harmonic index omega: float # angular frequency phase: float # φ_k initial phase amplitude: float # A_k

## 2.3 Geometry Config

@dataclass class GeometryConfig: R: float # major radius r: float # minor radius twists: int # coil twists deformations: dict # parameters for bending, etc.

## 2.4 Field & Interference Result

import numpy as np from dataclasses import dataclass @dataclass class FieldConfig: geometry: GeometryConfig modes: list[Mode] grid_theta: np.ndarray grid_phi: np.ndarray @dataclass class InterferencePattern: intensity: np.ndarray # I(θ, φ) stats: dict # energy, smoothness, etc.

## 2.5 Cipher Candidate

@dataclass class CipherCandidate: key: str # key / warp / mode combo descriptor plaintext: str score: float # combined score meta: dict # extra diagnostic info

# 3. Module Responsibilities & Key APIs

## 3.1 symbols/

### glyph_table.py

Holds mapping from your glyphs / runes → GlyphParams.

GLYPH_TABLE: dict[str, GlyphParams] = { # 'Z1': GlyphParams(...), # 'Ᾰ': GlyphParams(...), }

### encoder.py

from .glyph_table import GLYPH_TABLE def encode_sequence(seq: list[str]) -> list[GlyphParams]: return [GLYPH_TABLE[s] for s in seq] def

apply_phi_warp(glyphs: list[GlyphParams], k: int) -> list[GlyphParams]: """Warp indices/angles using φ(p) = p−1.""" warped = [] for g in glyphs: phi = g.prime − 1 new_index = (g.index + k * phi) % 29 # or len(table) # adjust angle accordingly # angle step per index = 2π / N warped.append(g) # update index/angle as needed return warped

# 3.2 geometry/

## torus.py

import numpy as np from ..symbols.encoder import GlyphParams from .deformations import apply_deformations def torus_coords(R, r, theta, phi): x = (R + r * np.cos(theta)) * np.cos(phi) y = (R + r * np.cos(theta)) * np.sin(phi) z = r * np.sin(theta) return x, y, z def build_geometry_from_glyphs(glyphs:

list[GlyphParams]) -> GeometryConfig: # e.g., use averages, sums, patterns R = 1.0 + 0.01 * sum(g.prime for g in glyphs) / len(glyphs) r = 0.3 # placeholder; tie to layers or spiral_sign later twists = len(set(g.layer for g in glyphs)) deformations = {"twist_bias": sum(g.spiral_sign for g in glyphs)} return GeometryConfig(R=R, r=r, twists=twists, deformations=deformations)

**deformations.py**

def apply_deformations(coords, config: GeometryConfig): # placeholder: later add bending, twisting etc. return coords

# 3.3 physics/

**waves.py** – Young's layer.

import numpy as np from ..modes.selectors import modes_from_glyphs from ..geometry.torus import torus_coords def wavefield_on_torus(field_cfg:

FieldConfig, t: float) -> np.ndarray: θ = field_cfg.grid_theta φ = field_cfg.grid_phi psi = np.zeros_like(θ, dtype=float) for mode in field_cfg.modes: psi += mode.amplitude * np.cos( mode.n * θ + mode.m * φ − mode.omega * t + mode.phase ) return psi def intensity_map(field_cfg: FieldConfig, num_samples: int = 32) -> np.ndarray: ts = np.linspace(0, 2*np.pi, num_samples) acc = np.zeros_like(field_cfg.grid_theta) for t in ts: acc += wavefield_on_torus(field_cfg, t) ** 2 return acc / num_samples

**elasticity.py** – sanity check for materials.

def max_strain_allowed(E: float, sigma_max: float) -> float: return sigma_max / E

# 3.4 modes/

**sequences.py** – Fibonacci, Lucas, prime helpers.

def lucas_sequence(n: int) −> list[int]: L0, L1 = 2, 1 seq = [L0, L1] for _ in range(2, n): seq.append(seq[−1] + seq[−2]) return seq **selectors.py** – Unified Everything mode selector.

```
from ..symbols.encoder import GlyphParams from .sequences import lucas_sequence from dataclasses import dataclass from ..physics.waves import Mode def modes_from_glyphs(glyphs: list[GlyphParams]) −> list[Mode]: # very basic example; refine later with Riemann / Kepler etc. lucas = lucas_sequence(len(glyphs) + 5) modes = [] for i, g in enumerate(glyphs): n = (g.index + lucas[i]) % 12 + 1 m = (g.prime % 12) + 1 omega = 0.5 + 0.01 * g.prime phase = g.angle_rad amp = 1.0 modes.append(Mode(n=n, m=m, omega=omega, phase=phase, amplitude=amp)) return modes
```

# 3.5 interference/

## field_solver.py

import numpy as np from ..geometry.torus import build_geometry_from_glyphs from ..modes.selectors import modes_from_glyphs from ..physics.waves import intensity_map, FieldConfig from ..symbols.encoder import GlyphParams from .scoring import score_intensity def build_field_config(glyphs: list[GlyphParams], nθ=128, nφ=128) -> FieldConfig: geom = build_geometry_from_glyphs(glyphs) θ = np.linspace(0, 2*np.pi, nθ) φ = np.linspace(0, 2*np.pi, nφ) Θ, Φ = np.meshgrid(θ, φ, indexing="ij") modes = modes_from_glyphs(glyphs) return FieldConfig(geometry=geom, modes=modes, grid_theta=Θ, grid_phi=Φ) def compute_interference(glyphs: list[GlyphParams]) -> InterferencePattern:

field_cfg = build_field_config(glyphs) I = intensity_map(field_cfg) stats = score_intensity(I) return InterferencePattern(intensity=I, stats=stats)

**scoring.py**

import numpy as np def score_intensity(I: np.ndarray) -> dict: mean = float(I.mean()) var = float(I.var()) # smoothness = low gradient energy gy, gx = np.gradient(I) smoothness = float(1.0 / (1e-9 + (gx**2 + gy**2).mean())) return {"mean": mean, "var": var, "smoothness": smoothness}

# 3.6 cipher/

**parser.py**

def text_to_symbol_sequence(text: str) -> list[str]: # map text -> your glyph alphabet # placeholder: one char -> one symbol return [c for c in text if not c.isspace()]

**candidates.py**

Here you generate phi-warps / key variants and run them through interference.

```
from ..symbols.encoder import encode_sequence, apply_phi_warp from ..interference.field_solver import compute_interference def generate_config_variants(symbols: list[str], ks=(0,1,2,3)) -> list[dict]: glyphs_base = encode_sequence(symbols) configs = [] for k in ks: glyphs_warped = apply_phi_warp(glyphs_base, k) pattern = compute_interference(glyphs_warped) configs.append({ "k": k, "glyphs": glyphs_warped, "pattern": pattern, }) return configs
```

**ranking.py**

```
from .candidates import generate_config_variants def rank_configs(symbols: list[str]) ->
```

list[dict]: configs = generate_config_variants(symbols) for cfg in configs: stats = cfg["pattern"].stats # simple scoring: prefer smooth, structured fields cfg["score"] = stats["smoothness"] − stats["var"] return sorted(configs, key=lambda c: c["score"], reverse=True)
Plaintext mapping / key guessing can be bolted on here later.

# 3.7 viz/plots.py

Just a simple heatmap to start.
import matplotlib.pyplot as plt from ..interference.field_solver import compute_interference from ..symbols.encoder import encode_sequence def plot_intensity_for_sequence(seq: list[str]): glyphs = encode_sequence(seq) pattern = compute_interference(glyphs) I = pattern.intensity plt.imshow(I,

origin="lower", interpolation="bilinear")
plt.colorbar(label="Intensity")
plt.title("Interference Pattern") plt.show()

# 4. Minimal Demo Pipeline

**scripts/demo_pipeline.py**

from projex_x_young.symbols.encoder import encode_sequence from projex_x_young.interference.field_solver import compute_interference from projex_x_young.viz.plots import plot_intensity_for_sequence def main(): seq = ["Z1", "Z2", "Z3"] # or some test glyphs plot_intensity_for_sequence(seq) if __name__ == "__main__": main()

Once this skeleton is up, *then* you start swapping:

- your real Ziltrit glyph tables
- your real Lucas/Riemann/Kepler rules
- your real AEON geometry parameters

The architecture doesn’t change — only

the guts get richer.

# 5. How to move from here

You said “All,” and “Run it,” and we’ve now done:

- v1: concept & unification
- v2: concrete architecture & API

Next logical hops (you don’t have to say anything right now):

- start with **symbols + interference** only (no full torus yet)
- then layer in the **torus geometry**
- then plug into **cipher text** and watch which configs generate “nice” fields

You’ve now got an implementation plan that actually matches everything you’ve already built in the PDFs.

When you’re ready, we can tighten any one module and make it brutal-level precise.

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@dataclass class GeometryConfig: R: float # major radius r: float # minor radius twists: int # coil twists deformations: dict # parameters for bending, etc.

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import numpy as np from dataclasses import dataclass @dataclass class FieldConfig: geometry: GeometryConfig modes: list[Mode] grid_theta: np.ndarray grid_phi: np.ndarray @dataclass class InterferencePattern: intensity: np.ndarray # I(θ, φ) stats: dict # energy, smoothness, etc.

## 2.5 Cipher Candidate

@dataclass class CipherCandidate: key: str # key / warp / mode combo descriptor plaintext: str score: float # combined score meta: dict # extra diagnostic info

# 3. Module Responsibilities & Key APIs

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### glyph_table.py

Holds mapping from your glyphs / runes → GlyphParams.

GLYPH_TABLE: dict[str, GlyphParams] = { # 'Z1': GlyphParams(...), # 'ש': GlyphParams(...), }

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list[GlyphParams]: """Warp indices/angles using φ(p) = p−1.""" warped = [] for g in glyphs: phi = g.prime − 1 new_index = (g.index + k * phi) % 29 # or len(table) # adjust angle accordingly # angle step per index = 2π / N warped.append(g) # update index/angle as needed return warped

# 3.2 geometry/

**torus.py**

import numpy as np from ..symbols.encoder import GlyphParams from .deformations import apply_deformations def torus_coords(R, r, theta, phi): x = (R + r * np.cos(theta)) * np.cos(phi) y = (R + r * np.cos(theta)) * np.sin(phi) z = r * np.sin(theta) return x, y, z def build_geometry_from_glyphs(glyphs: list[GlyphParams]) -> GeometryConfig: # e.g., use averages, sums, patterns R = 1.0

+ 0.01 * sum(g.prime for g in glyphs) / len(glyphs) r = 0.3 # placeholder; tie to layers or spiral_sign later twists = len(set(g.layer for g in glyphs)) deformations = {"twist_bias": sum(g.spiral_sign for g in glyphs)} return GeometryConfig(R=R, r=r, twists=twists, deformations=deformations)

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psi = np.zeros_like(θ, dtype=float) for mode in field_cfg.modes: psi += mode.amplitude * np.cos( mode.n * θ + mode.m * φ − mode.omega * t + mode.phase ) return psi def intensity_map(field_cfg: FieldConfig, num_samples: int = 32) -> np.ndarray: ts = np.linspace(0, 2*np.pi, num_samples) acc = np.zeros_like(field_cfg.grid_theta) for t in ts: acc += wavefield_on_torus(field_cfg, t) ** 2 return acc / num_samples

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def max_strain_allowed(E: float, sigma_max: float) -> float: return sigma_max / E

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def lucas_sequence(n: int) -> list[int]: L0, L1 = 2, 1 seq = [L0, L1] for _ in range(2, n):

seq.append(seq[−1] + seq[−2]) return seq
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# 3.5 interference/

## field_solver.py

```
import numpy as np from ..geometry.torus import build_geometry_from_glyphs from ..modes.selectors import modes_from_glyphs from ..physics.waves import intensity_map, FieldConfig from ..symbols.encoder import GlyphParams from .scoring import score_intensity def build_field_config(glyphs: list[GlyphParams], nθ=128, nφ=128) -> FieldConfig: geom = build_geometry_from_glyphs(glyphs) θ = np.linspace(0, 2*np.pi, nθ) φ = np.linspace(0, 2*np.pi, nφ) Θ, Φ = np.meshgrid(θ, φ, indexing="ij") modes = modes_from_glyphs(glyphs) return FieldConfig(geometry=geom, modes=modes, grid_theta=Θ, grid_phi=Φ) def compute_interference(glyphs: list[GlyphParams]) -> InterferencePattern: field_cfg = build_field_config(glyphs) I = intensity_map(field_cfg) stats =
```

score_intensity(I) return InterferencePattern(intensity=I, stats=stats)

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import numpy as np def score_intensity(I: np.ndarray) -> dict: mean = float(I.mean()) var = float(I.var()) # smoothness = low gradient energy gy, gx = np.gradient(I) smoothness = float(1.0 / (1e-9 + (gx**2 + gy**2).mean())) return {"mean": mean, "var": var, "smoothness": smoothness}

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compute_interference def
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list[str], ks=(0,1,2,3)) -> list[dict]:
glyphs_base =
encode_sequence(symbols) configs = []
for k in ks: glyphs_warped =
apply_phi_warp(glyphs_base, k) pattern =
compute_interference(glyphs_warped)
configs.append({ "k": k, "glyphs":
glyphs_warped, "pattern": pattern, }) return
configs
**ranking.py**
from .candidates import
generate_config_variants def
rank_configs(symbols: list[str]) ->
list[dict]: configs =
generate_config_variants(symbols) for

cfg in configs: stats = cfg["pattern"].stats # simple scoring: prefer smooth, structured fields cfg["score"] = stats["smoothness"] − stats["var"] return sorted(configs, key=lambda c: c["score"], reverse=True)

Plaintext mapping / key guessing can be bolted on here later.

# 3.7 viz/plots.py

Just a simple heatmap to start.

import matplotlib.pyplot as plt from ..interference.field_solver import compute_interference from ..symbols.encoder import encode_sequence def plot_intensity_for_sequence(seq: list[str]): glyphs = encode_sequence(seq) pattern = compute_interference(glyphs) I = pattern.intensity plt.imshow(I, origin="lower", interpolation="bilinear") plt.colorbar(label="Intensity")

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