Full-Ten Chebyshev–Weyl Hypergroup Source Package

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Abstract

This paper isolates the finite/full-ten source package used upstream of the DVJ construction. It imports the exact rank-ten Weyl–Verlinde hypergroup package from H-PAP008, records all six classical Chebyshev kinds through their closed repository owners, and owns the H-VER129 full-ten source, H-VER086/102/103/127 supported-Pauli/SWAP package, and H-VER134 retained source-character sectors. DVJ analytic coupling remains downstream and no Riemann-hypothesis claim is made.

0. Certified full-ten hypergroup source boundary

Reader contract. H-PAP014 does not re-prove the exact finite rank-ten Weyl–Verlinde hypergroup construction. It imports that certified package from H-PAP008. At this additive checkpoint the existing full-ten, supported-Pauli and retained-character source surfaces are also imported from H-PAP002; they are not removed or rewritten there. The only new paper-facing closure displayed locally is the six-kind Chebyshev package, whose theorem owners are already closed in the repository. The four-ality Chebyshev rail (H-VER071, H-VER072) is displayed beside it, off the certified path.

Imported sources. The four equations below are displayed for reader-facing self-containment; their mathematical ownership remains with the named H-PAP008 Section-0 boxes.

H-PAP008 `front-pap008-h10-source`:

$$H_{10}^{\mathrm{zorb3}} = \{\mathcal{L}_{10};\, *\}, \qquad |\mathcal{L}_{10}| = 10, \qquad S^{\dagger}S = I,$$

$$N_a = S\ \mathrm{diag}(\lambda_x(a))_{x\in\mathcal{B}_{10}}\ S^{\dagger}.$$

H-PAP008 `front-pap008-hypergroup-isomorphism`:

$$\Phi_H(\kappa_\lambda) = k_{\ell(\lambda)}, \qquad \mathrm{Norm}\,\mathcal{V}_2(A_3^{(1)}) \cong H_{10}^{\mathrm{zorb3}}.$$

H-PAP008 `front-pap008-fourier`:

$$\chi_\lambda(x_\mu) = \frac{S_{\lambda\mu}}{S_{0\mu}}, \qquad S_{0\mu} = \frac{d_\mu}{\sqrt{24}}.$$

H-PAP008 `front-pap008-chebyshev`: The second-kind index below follows the corrected body convention of H-PAP008, Section 8.

$$\frac{N_g^n + N_g^{-n}}{2} = T_n(E_1), \qquad \frac{N_g^n - N_g^{-n}}{2i} = O_1 U_{n-1}(E_1).$$

$$V_n = U_n - U_{n-1}, \qquad W_n = U_n + U_{n-1}.$$

Six-kind Chebyshev closure: H-VER065, H-VER069, H-VER072, H-VER082 and H-VER083.

Certified owners: H-VER065, H-VER069, H-VER072, H-VER082, H-VER083 .
Covering provenance: H-VER065, H-VER069, H-VER072, H-VER082, H-VER083 .

$$\begin{gathered} V_n = U_n - U_{n-1}, \qquad W_n = U_n + U_{n-1}, \\ C_{2m}(x) = 4^{-m} V_m(T_2(x)), \qquad Y_{2m}(x) = 4^{-m} U_m(T_2(x)), \\ T_n,\ U_n,\ V_n,\ W_n,\ C_{2m},\ Y_{2m} \quad \text{are retained as the six-kind Chebyshev surface.} \end{gathered} \tag{1}$$

Four-ality Chebyshev rail: H-VER071, H-VER072.

Certified owners: H-VER071, H-VER072 .
Covering provenance: H-VER071, H-VER072, H-VER070, H-VER064 .

$$\begin{gathered} J(a,b,c) := (2-a-b-c, a, b), \\ g_4 := \phi_3^1 \longleftrightarrow (2,0,0), \qquad q_4(a,b,c) := a + 2b + 3c \pmod 4, \\ g_4 \star \lambda = J\lambda, \qquad \chi_{g_4}(\mu) = i^{q_4(\mu)}, \\ z_\mu := i^{q_4(\mu)}, \qquad E_n(\mu) := \frac{z_\mu^n + z_\mu^{-n}}{2}, \\ E_2(\mu) = 2E_1(\mu)^2 - 1, \qquad T_2(x) := 2x^2 - 1, \qquad E_2(\mu) = T_2(E_1(\mu)). \end{gathered} \tag{2}$$

H-VER129 full-ten singleton owner: The finite H-PAP008 source is completed to a literal ten-column owner before any supported reduction.

Certified owners: H-VER129 .
Covering provenance: H-VER129, H-VER064, H-VER068, H-VER070 .

$$\begin{gathered} k_a^{(14)}|_{a=0}, \ldots, k_a^{(14)}|_{a=9} \in \mathbb{C}^{10}, \qquad K_{10} = [k_0^{(14)} \ \cdots \ k_9^{(14)}], \\ {K_{10}}^\dagger K_{10} = I_{10}, \qquad K_{10} {K_{10}}^\dagger = I_{10}, \\ P_a = k_a^{(14)} (k_a^{(14)})^\dagger, \qquad P_a P_b = \delta_{ab} P_a, \qquad \sum_{a=0}^{9} P_a = I_{10}, \\ I_+ := \{0,1,2,3,4,5\}, \qquad I_- := \{6,7,8,9\}, \\ \sum_{a \in I_-} P_a = E_{10}^-, \qquad \sum_{a \in I_+} P_a = E_{10}^+, \qquad E_{10}^+ + E_{10}^- = I_{10}. \end{gathered} \tag{3}$$

Pauli/SWAP: H-VER086, H-VER102, H-VER103, H-VER127: The full-ten owner carries the exact supported two-Pauli source and SWAP calculus; the corner identity remains E_{10}^-, not I_{10}.

Certified owners: H-VER086, H-VER102, H-VER103, H-VER127 .
Covering provenance: H-VER086, H-VER102, H-VER103, H-VER127, H-VER070, H-VER129 .

$$
\begin{aligned}
&\zeta_{48}^{\mathrm{HG}} := \text{the H-VER086 primitive root}, \qquad \zeta_{48}^{\mathrm{HG}} \in \mathbb{Q}(\zeta_{48}),\\
&(t_a)_{a=0}^{9} := (-2,-2,34,34,2,14,1,1,25,25),\\
&T_{10} := \mathrm{diag}((\zeta_{48}^{\mathrm{HG}})^{\,t_a})_{a=0}^{9},\\
&A_{48} := \mathrm{diag}(0,0,0,0,0,0,-1,-1,1,1),\\
&X_{48} := S\,A_{48}\,S^{\dagger},\\
&Z_{48} := E_{10}^{-} {T_{10}}^{24} E_{10}^{-},\\
&C_{10} := (\delta_{a,\bar{b}})_{a,b\in\mathcal{L}_{10}}, \qquad F := N_{\phi_3^1},\\
&F_{-} := E_{10}^{-} F E_{10}^{-}, \qquad J_F := iF_{-},\\
&C_{-} := E_{10}^{-} C_{10} E_{10}^{-},\\
&Y_{48} := iX_{48}Z_{48}, \qquad Y_F := iJ_F C_{-},\\
&W := \frac{1}{2}\Big(E_{10}^{-} + X_{48}J_F\\
&\qquad\qquad + Z_{48}C_{-} + Y_{48}Y_F\Big),\\
&W^2 = E_{10}^{-}.
\end{aligned}
\tag{4}
$$

H-VER134 retained source-character sectors: The informative corner remains bilateral and source-owned before the DVJ entire/log-cover coupling is introduced downstream.

Certified owners: H-VER134 .
Covering provenance: H-VER134, H-VER129 .

$$
\begin{aligned}
&\textbf{H-VER134 Retained Source-Character Sectors}\\
&P_{\mathrm{fwd}} := P_6 + P_8, \qquad P_{\mathrm{inv}} := P_7 + P_9,\\
&{P_{\mathrm{fwd}}}^2 = P_{\mathrm{fwd}}, \qquad {P_{\mathrm{inv}}}^2 = P_{\mathrm{inv}}, \qquad P_{\mathrm{fwd}}P_{\mathrm{inv}} = 0,\\
&P_{\mathrm{fwd}} + P_{\mathrm{inv}} = E_{10}^{-}.
\end{aligned}
\tag{5}
$$

Certified H-PAP014 package: The imported exact finite hypergroup/Chebyshev source and the local full-ten Pauli/retained-sector owners meet at the paper sink.

Certified owners: LOGIC .
Covering provenance: LOGIC .

$$
\begin{aligned}
&\mathcal{P}_{014} := (C_{2m}, Y_{2m}; C_{10}, J_F; P_{\mathrm{fwd}}, P_{\mathrm{inv}}),\\
&\text{exact six-kind Chebyshev–Weyl hypergroup source} \oplus \text{full-ten supported-Pauli source}\\
&\oplus\text{retained bilateral source-character sectors} = \text{H-PAP014 SOURCE PACKAGE}.
\end{aligned}
\tag{6}
$$

H-PAP014 is now the paper-facing owner of the H-VER129 full-ten source. It also owns the H-VER086, H-VER102, H-VER103 and H-VER127 supported-Pauli package, together with the H-VER134 retained sectors. H-PAP002 consumes these boxes by certified paper import. H-VER150 and H-VER171 remain in H-PAP002 because they also consume the H-VER149 DVJ log-cover/product-law source and therefore are coupling theorems rather than pure finite Hypergroup ownership.

1 Full-ten supported-Pauli source

The exact rank-ten Weyl–Verlinde hypergroup package imported from H-PAP008 is promoted by H-VER129 to a literal orthonormal ten-column source owner. With $P_a = k_a^{(14)}(k_a^{(14)})^\dagger$,

$$\sum_{a=0}^{9} P_a = I_{10}, \qquad E_{10}^{+} = \sum_{a=0}^{5} P_a, \qquad E_{10}^{-} = \sum_{a=6}^{9} P_a, \qquad E_{10}^{+} + E_{10}^{-} = I_{10}. \tag{7}$$

The four-dimensional supported sector is therefore an exact subspace of the full-ten owner, never a replacement for it.

Supported Pauli/source axes. H-VER086, H-VER102, H-VER103 and H-VER127 give two exact Pauli factors in the complex corner algebra $E_{10}^{-} M_{10} E_{10}^{-}$. In particular,

$$J_F = iE_{10}^{-} F E_{10}^{-}, \qquad J_F^2 = E_{10}^{-}, \qquad C_- = E_{10}^{-} C_{10} E_{10}^{-}, \qquad C_-^2 = E_{10}^{-}, \tag{8}$$

while the source-phase pair satisfies

$$X_{48}^2 = Z_{48}^2 = E_{10}^{-}, \qquad X_{48} Z_{48} = -Z_{48} X_{48}, \qquad J_F C_- = -C_- J_F. \tag{9}$$

The canonical supported SWAP is

$$\begin{aligned} W &= \frac{1}{2}\Big(E_{10}^{-} + X_{48} J_F + Z_{48} C_- + Y_{48} Y_F\Big), \\ W^2 &= E_{10}^{-}. \end{aligned} \tag{10}$$

Thus the corner identity is E_{10}^{-}, not I_{10}.

Forward and inverse retained sectors. H-VER134 resolves the informative supported sector into two orthogonal source-character projectors,

$$P_{\mathrm{fwd}} P_{\mathrm{inv}} = 0, \qquad P_{\mathrm{fwd}} + P_{\mathrm{inv}} = E_{10}^{-}, \qquad J_F = P_{\mathrm{fwd}} - P_{\mathrm{inv}}. \tag{11}$$

Finite charge conjugation exchanges the two sectors. This finite operation is not analytic complex conjugation of a scalar special function.

No scalar replacement. The later DVJ characters on the two retained sectors are useful readouts, but those scalar values do not carry the ten labelled source vectors, the complementary E_{10}^{+} sector, the full charge action, or basis reconstruction. The public source direction is therefore

$$\boxed{\begin{array}{c} \text{full-ten owner} \longrightarrow \text{supported exact coordinate certificate} \\ \longrightarrow \text{scalar witness}, \\ \text{no reverse arrow by default.} \end{array}} \tag{12}$$