

This file describes the Borcherds products $Borch(\psi)$ that were used to help span $S_4(K(62))^\wedge$. For each such ψ , the list below gives information

(singularPart, phi, combo)

that describes ψ and lets us confirm that ψ gives rise to a suitable BP. Here singularPart is the singular part of ψ , from which it can be deduced that $Borch(\psi)$ is a weight 4, level 62 Fricke minus cusp form. And phi is a theta block in $J_{\{4,62\}}^\wedge\text{cusp}$ and is the leading Fourier Jacobi coefficient of $Borch(\psi)$, as can be seen from the singular Part of ψ . And ψ lies in $J_{\{0,62\}}^\wedge\{w.h.\}$ and is defined by

$$\psi = \text{phi}|V_2 / \text{phi} + \text{combo.Weight12Basis}/\Delta_{12}.$$

Here V_2 is an index raising operator, and combo is a vector of coefficients. The basis Weight12Basis of $J_{\{12,N\}}^\wedge\text{cusp}$ is given following the list of ψ .

Number of ψ 's: 1.

ψ #1:(
8 + q⁽⁻¹⁾ + z⁽⁻⁵⁾ + 2/z⁴ + 4/z³ + 6/z² + 7/z + 7*z + 6*z² + 4*z³ + 2*z⁴

$$+ z^5 + q*(5/z^{16} + 5*z^{16}) + q^7*(z^{(-42)} + z^{42}) + q^{10}*(z^{(-50)} + z^{50}) + q^{13}*(z^{(-57)} + z^{57}) + q^{14}*(4/z^{59} + 4*z^{59}) + q^{15}*(7/z^{61} + 7*z^{61}))$$

TB(4;1,1,1,1,1,1,1,2,2,2,2,2,2,3,3,3,3,4,4,5),
{588762476360083197196928626626692491053353349745653161984,
-16655966183690958557306310165765420255295062914959584567296,
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-5926200490654221754915214273147130072098599897743662644165659392,
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-8921794148813658296406876091772459101320038069578851985497314304,
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-370659353235508313445599508554759367978087407124424130805760,
-11055323731498987369125580355508292460962654655751947525945557,
-164152814122895682200368148077823619778941656776502945783808,
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-127556351468004895336841108740811845940454170047982626152448,
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-152461036773462299668013623386662192254689099971218777405457236,
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131455170729660521367013405382949593536271038052736592289792,
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-362776038859292859500787859097683244733876121385716458019090725,
-124857444380477063497736212755717038478586962288027910409716560,
-243909742924633206635869131598674650826612368050850747359232,
-44982479661001628800457343557070397483969760976409686761010389,
-150016993681485982014146610964494732499728886540368137138854912,
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-2601266561571976357327294267024038372285858176173080576,
-12634188162384324612932617466541281422352808022223355904,
-9855133607507718925026732007542830316542260041001992192,
-7343896685800567790256335203314598800370288813009797120,
-7659918431736031227855973676927573829900941553404215296,
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4742630124228591432929040936290560428084430636836716544,
10889756881258612057830926635344093546366879859363282944,
-159684979179281875840870045596298726070205568310675767296}/
73058696161644157329596928094739435872917825909254359351296,

The basis of $J_{\{12,62\}}^\wedge\{cusp\}$ (with dimension 51) is given by the following theta blocks possibly with index lowering operators

Weight12Basis = {
TB(12;1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,3,3,5),
TB(12;1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,4,4,6,6),
TB(12;1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,2,2,5,6,6),
TB(12;1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,2,2,2,2,3,9),
TB(12;1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,2,2,2,3,6,7),
TB(12;1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,2,3,4,4,5,6),
TB(12;1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,3,3,4,4,4,5),
TB(12;1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,3,3,3,3,4,4,4),
TB(12;1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,2,2,2,2,2,3,3,8),
TB(12;1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,2,2,2,2,2,2,6,6),
TB(12;1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,2,2,3,3,3,3,4,4),
TB(12;1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,2,2,2,2,2,2,3,3,7),
TB(12;1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,2,2,2,2,2,2,3,3,3,3),
TB(12;1,1,1,1,2,2,2,2,2,2,2,2,2,2,2,2,3,3,3,3,3,3),
TB(12;2,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3,4,4,4,5)|W_2,
TB(12;2,4,12)|W_2,
TB(12;1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,3,3,12)|W_2,
TB(12;1,2,4,8,12)|W_2,
TB(12;2,6,8,8)|W_2,
TB(12;1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,3,4,5,11)|W_2,
TB(12;1,6,8,8,8)|W_2,
TB(12;1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,3,7,7,8)|W_2,
TB(12;1,2,2,3,4,14)|W_2,
TB(12;2,3,3,3,8,9)|W_2,
TB(12;1,2,2,4,6,13)|W_2,
TB(12;2,3,4,7,7,7)|W_2,
TB(12;1,2,2,6,8,11)|W_2,
TB(12;1,2,3,4,10,10)|W_2,
TB(12;1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,3,3,3,4,6,10)|W_2,
TB(12;1,2,4,4,7,12)|W_2,
TB(12;1,2,4,8,8,9)|W_2,
TB(12;2,4,4,6,6,6,6)|W_2,
TB(12;2,4,5,5,5,6,7)|W_2,
TB(12;1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,3,3,3,3,7,7,7)|W_2,
TB(12;1,4,6,7,8,8)|W_2,
TB(12;2,3,3,3,3,3,11)|W_2,
TB(12;1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,3,3,3,3,5,6,9)|W_2,
TB(12;1,2,3,4,4,13)|W_2,
TB(12;1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,3,3,3,4,6,6,6)|W_2,
TB(12;2,3,5,5,5,5,5)|W_2,
TB(12;1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,3,4,4,4,7,7,7)|W_2,
TB(12;2,3,3,3,3,3,9)|W_2,
TB(12;3,4,4,4,12)|W_3,
TB(12;2,4)|W_3,
TB(12;2,3,4,6,8,9)|W_3,
TB(12;1,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3,6,6,8,8)|W_3,
TB(12;1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,7,11,11)|W_3,
TB(12;1,4,4,8,16)|W_3,
TB(12;1,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3,3,4,4,7,8,8)|W_3,
TB(12;1,2,3,9,14)|W_3,
TB(12;1,2,2,5,8,16)|W_3