

26b. Spectral parameters of holomorphic automorphic forms

Start with a holomorphic function F and construct the corresponding function on G

```
In[ * ]:= Clear[F]
f[ns[x, y, r]** as[t_]] = t^(-h/2) F[actX[nm[x, y, r].am[t], {I, 0}]] /. F[{z_, u_}] -> F[z, u]
ff = % Phi[h, 0, 0, 0]
Out[ * ]= t^(-h/2) F[2 r + i (t^2 + x^2 + y^2), i x + y]
Out[ * ]= t^(-h/2) F[2 r + i (t^2 + x^2 + y^2), i x + y] * Phi[h, 0, 0, 0]
```

Eigenvalues of generators of $ZU(\mathfrak{g})$

```
In[ * ]:= l2 = eR[CasXW, ff, subNA] / ff
l3 = eR[Dt3Z, ff, subNA] / ff // Factor
Out[ * ]= 1/3 h (6 + h)
Out[ * ]= 1/9 h (6 + h) * (12 + h)
In[ * ]:= {ld2[-h - 3, 1] == l2, ld3[-h - 3, 1] == l3} // Simplify
Out[ * ]= {True, True}
```

This confirms the spectral parameters mentioned in the proposition