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#####Program from
web:#####
# A Clebsch–Gordon Coefficient "Procedure" using MAPLE #
# courtesy Ted Barnes
#
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cg :=proc(j1, m1, j2, m2, j, m)
local faila, failb, failc, c1, c2, c3, c4, c5, z, zmin, zmax, cgsum, cgcoeff, term1, term2,
ans;
ans := 0;
faila := evalb(j1 < abs(m1)) or evalb(j2 < abs(m2)) or evalb(j < abs(m));
failb := evalb(j > j1 + j2) or evalb(j < abs(j1-j2));
failc := not evalb(m = m1 + m2);
if faila or failb or failc then RETURN(ans) fi;
c1 := j1 + j2 - j;
c2 := j1 - m1;
c3 := j2 + m2;
zmax := min(c1, c2, c3);
c4 := j2 - j - m1;
c5 := j1 - j + m2;
zmin := max(0, c4, c5);

cgsum := 0;
for z from zmin to zmax
do
cgsum := % + (-1)^z / (z!* (c1-z)!* (c2-z)!* (c3-z)!* (-c4+z)!* (-c5+z)!)
od;
term1 := (2*j+1) * (j1+j2-j)!* (j1-j2+j)!* (-j1+j2+j)!;
term2 := (j1+m1)!* (j1-m1)!* (j2+m2)!* (j2-m2)!* (j+m)!* (j-m)!;
cgcoeff := sqrt(term1*term2 / (j1+j2+j+1)!);
if evalb(m1+m2=m) then ans := cgcoeff*cgsum else ans := 0 fi;
ans;
end;
```

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proc(j1, m1, j2, m2, j, m)
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local faila, failb, failc, c1, c2, c3, c4, c5, z, zmin, zmax, cgsum, cgcoeff,
term1, term2, ans;
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ans:= 0;
faila:= evalb(j1 < abs(m1)) or evalb(j2 < abs(m2)) or evalb(j < abs(m));
failb:= evalb(j1 + j2 < j) or evalb(j < abs(j1 - j2));
failc:= not evalb(m = m1 + m2);
if faila or failb or failc then RETURN(ans) end if;
c1 := j1 + j2 - j;
c2 := j1 - m1;
c3 := j2 + m2;
zmax:= min(c1, c2, c3);
c4 := j2 - j - m1;
c5 := j1 - j + m2;
zmin:= max(0, c4, c5);
cgsum:= 0;
for z from zmin to zmax do
  cgsum:= `%` + (-1)^z / (factorial(z) * factorial(c1 - z)
  * factorial(c2 - z) * factorial(c3 - z) * factorial(-c4 + z) * factorial(-c5
  + z))
end do;
term1:= (2*j + 1) * factorial(j1 + j2 - j) * factorial(j1 - j2 + j) * factorial(
- j1 + j2 + j);
term2:= factorial(j1 + m1) * factorial(j1 - m1) * factorial(j2 + m2)
* factorial(j2 - m2) * factorial(j + m) * factorial(j - m);
cgcoeff:= sqrt(term1 * term2 / factorial(j1 + j2 + j + 1));
if evalb(m1 + m2 = m) then ans:= cgcoeff* cgsum else ans:= 0 end if;
ans
end proc

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examples:

$$cg(1, 1, 1, 1, 2, 2); \quad 1 \quad (2)$$

$$cg(1, 0, 1, 1, 2, 1); cg(1, 1, 1, 0, 2, 1); \quad \frac{1}{2} \sqrt{2} \quad (3)$$

$$cg(1, 0, 1, 1, 1, 1); cg(1, 1, 1, 0, 1, 1); \quad -\frac{1}{2} \sqrt{2}$$

$$\frac{1}{2} \sqrt{2} \tag{4}$$

$$cg(1, 0, 1, 0, 0, 0); cg(1, -1, 1, 1, 0, 0); cg(1, 1, 1, -1, 0, 0);$$

$$-\frac{1}{3} \sqrt{3}$$

$$\frac{1}{3} \sqrt{3}$$

$$\frac{1}{3} \sqrt{3} \tag{5}$$

$$cg\left(\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{1}{2}, 1, 1\right);$$

$$cg\left(\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, 0, 0\right); cg\left(\frac{1}{2}, \frac{1}{2}, \frac{1}{2}, -\frac{1}{2}, 0, 0\right); \tag{6}$$

$$-\frac{1}{2} \sqrt{2}$$

$$\frac{1}{2} \sqrt{2} \tag{7}$$