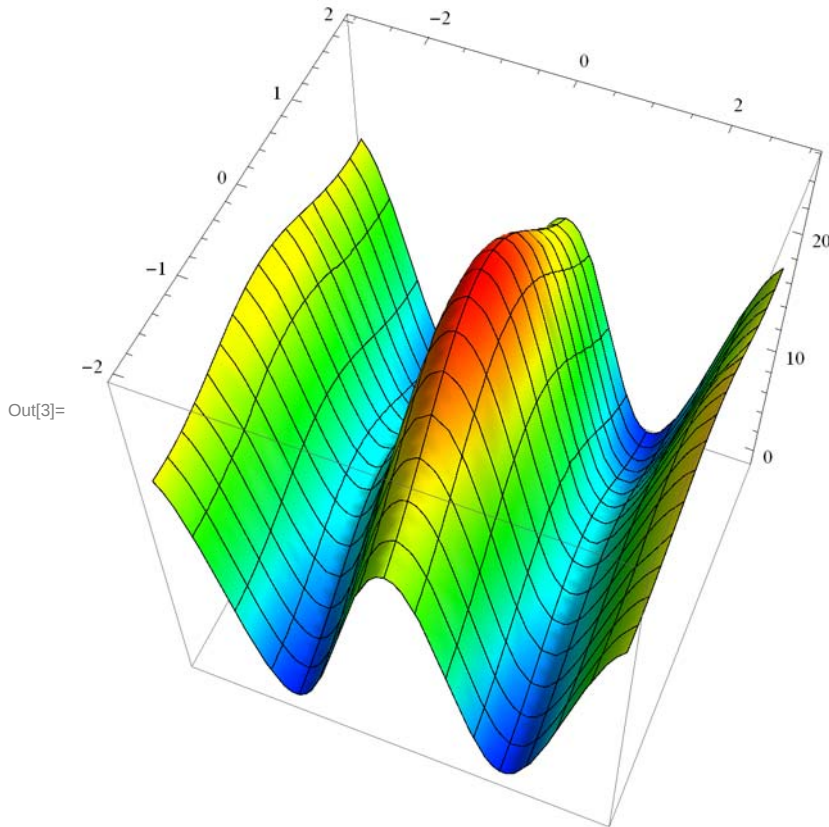


```
In[1]:= z0 = 10; a1 = 0.12; a2 = 9.09; b1 = 3.23; b2 = 0.87; c1 = 2.32;
```

```
In[2]:= z = z0 + a1 * Cos[x] + a2 * Cos[2 * x] + b1 * Cos[y] + b2 * Cos[2 * y] + c1 * Cos[x] * Cos[y]
```

```
Out[2]= 10 + 0.12 Cos[x] + 9.09 Cos[2 x] + 3.23 Cos[y] + 2.32 Cos[x] Cos[y] + 0.87 Cos[2 y]
```

```
In[3]:= Plot3D[z, {x, -3, 3}, {y, -2, 2}, PlotRange -> All, BoxRatios -> {1, 1, 1.1},
ColorFunction -> Function[{x, y, z}, Hue[.65 (1 - z)]]]
```



```
In[4]:= ClearAll[z, z0, a1, a2, b1, b2, c1]
```

```
In[5]:= data = {{-3, -2, 17.65212338}, {-2.7, -1.8, 14.62337143},
{-2.4, -1.6, 9.794000784}, {-2.1, -1.4, 5.013135217},
{-1.8, -1.2, 2.159082776}, {-1.5, -1, 2.481254548}, {-1.2, -0.8, 6.151233566},
{-0.9, -0.6, 12.18065692}, {-0.6, -0.4, 18.73766201},
{-0.3, -0.2, 23.75607983}, {0, 0, 25.63}, {0.3, 0.2, 23.75607983},
{0.6, 0.4, 18.73766201}, {0.9, 0.6, 12.18065692}, {1.2, 0.8, 6.151233566},
{1.5, 1, 2.481254548}, {1.8, 1.2, 2.159082776}, {2.1, 1.4, 5.013135217},
{2.4, 1.6, 9.794000784}, {2.7, 1.8, 14.62337143}, {3, 2, 17.65212338}}
```

```
Out[5]= {{-3, -2, 17.6521}, {-2.7, -1.8, 14.6234}, {-2.4, -1.6, 9.794},
{-2.1, -1.4, 5.01314}, {-1.8, -1.2, 2.15908}, {-1.5, -1, 2.48125},
{-1.2, -0.8, 6.15123}, {-0.9, -0.6, 12.1807}, {-0.6, -0.4, 18.7377},
{-0.3, -0.2, 23.7561}, {0, 0, 25.63}, {0.3, 0.2, 23.7561}, {0.6, 0.4, 18.7377},
{0.9, 0.6, 12.1807}, {1.2, 0.8, 6.15123}, {1.5, 1, 2.48125}, {1.8, 1.2, 2.15908},
{2.1, 1.4, 5.01314}, {2.4, 1.6, 9.794}, {2.7, 1.8, 14.6234}, {3, 2, 17.6521}}
```

```
In[6]:= z = z0 + a1 * Cos[x] + a2 * Cos[2 * x] + b1 * Cos[y] + b2 * Cos[2 * y] + c1 * Cos[x] * Cos[y]
```

```
Out[6]= z0 + a1 Cos[x] + a2 Cos[2 x] + b1 Cos[y] + c1 Cos[x] Cos[y] + b2 Cos[2 y]
```

```
In[7]:= fit = FindFit[data, z, {z0, a1, a2, b1, b2, c1}, {x, y}]
```

```
Out[7]= {z0 → 10., a1 → 0.120003, a2 → 9.09, b1 → 3.23, b2 → 0.869998, c1 → 2.32}
```

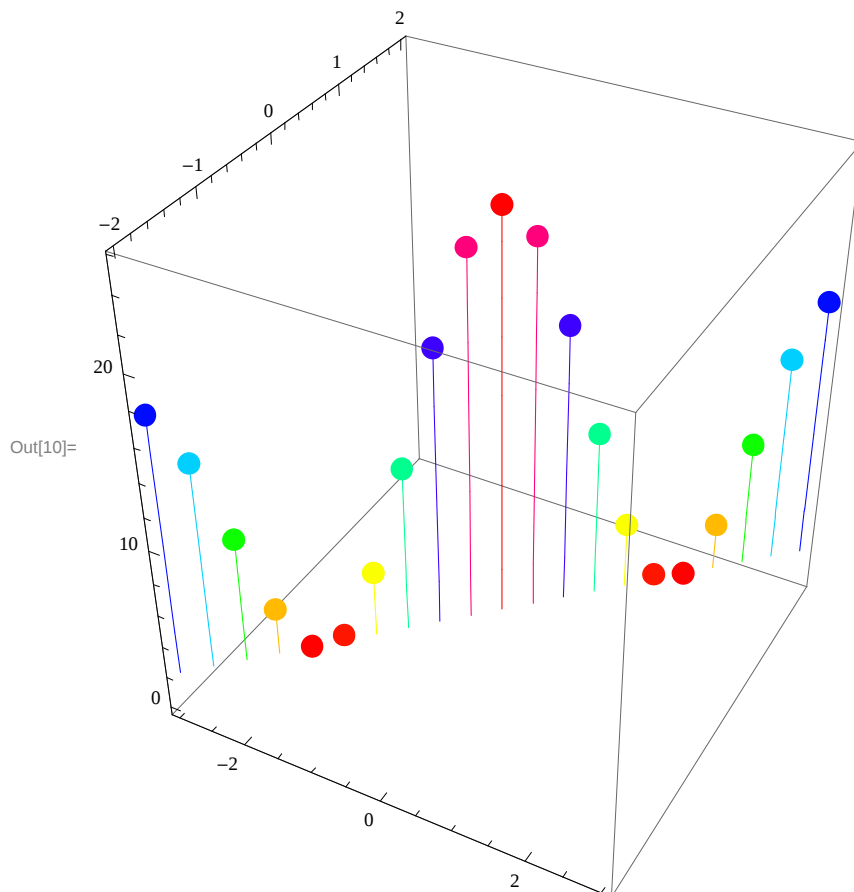
```
In[8]:= nlm = NonlinearModelFit[data, z, {z0, a1, a2, b1, b2, c1}, {x, y}]
```

```
Out[8]= FittedModel[10. + <<4>> + 0.869998 Cos[2 y]]
```

```
In[9]:= nlm[{"ParameterTable", "RSquared"}]
```

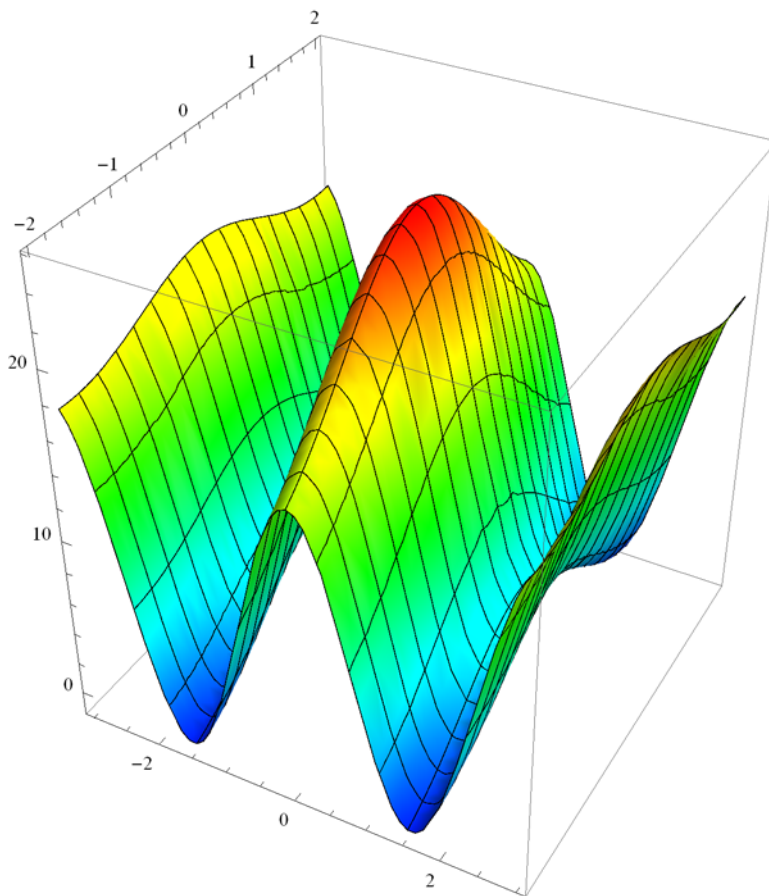
```
Out[9]= {
  Estimate   Standard Error   t-Statistic   P-Value
  z0  10.      3.22323×10-7    3.10248×107  5.64564×10-105
  a1  0.120003 5.91447×10-6    20289.7      3.29759×10-57
  a2  9.09     2.34517×10-7    3.87605×107  2.00223×10-106, 1.
  b1  3.23     4.96918×10-6    650006.      8.58195×10-80
  b2  0.869998 3.86526×10-6    225081.      6.95428×10-73
  c1  2.32     2.83721×10-6    817704.      2.74413×10-81
}
```

```
In[10]:= g1 = ListPointPlot3D[data, Filling → Bottom, PlotStyle → PointSize[0.03],
  ColorFunction → Function[{x, y, z}, Hue[z]], BoxRatios → {1, 1, 1.1}]
```

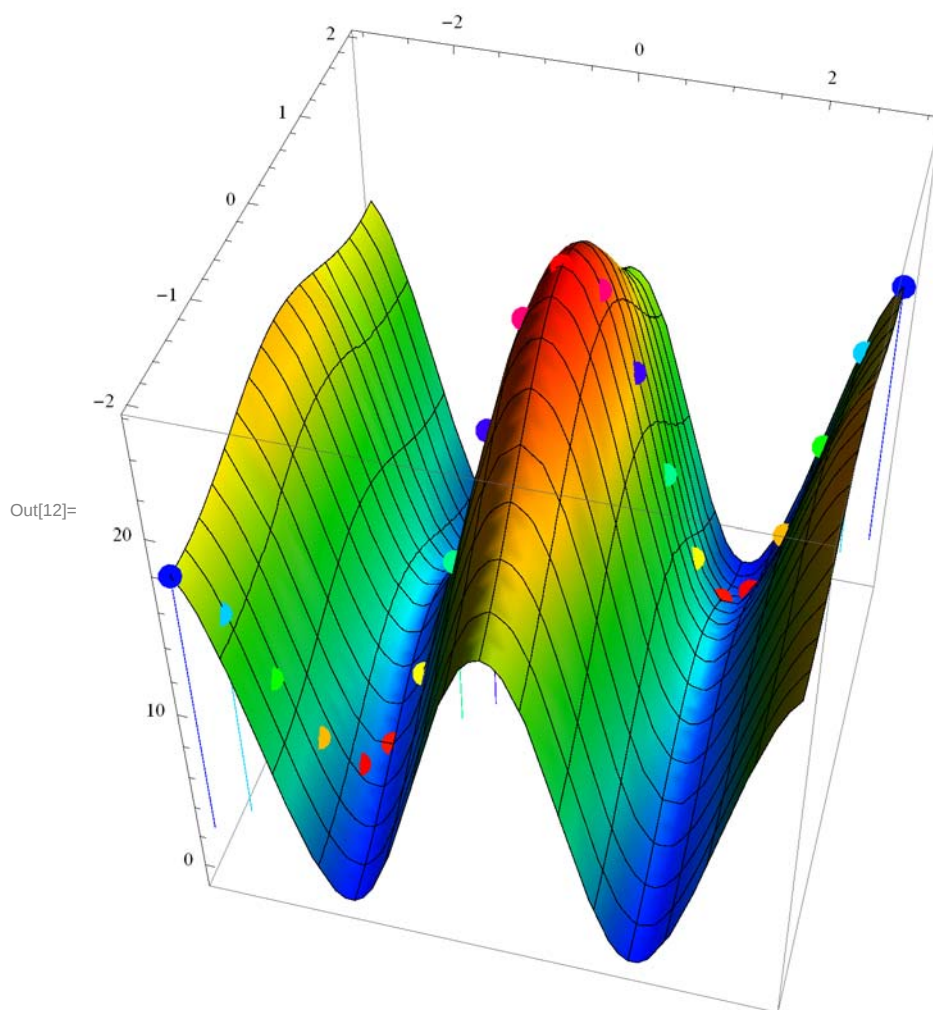


```
In[11]:= g2 = Plot3D[z /. fit, {x, -3, 3}, {y, -2, 2}, PlotRange -> All,  
BoxRatios -> {1, 1, 1.1}, ColorFunction -> Function[{x, y, z}, Hue[.65 (1 - z)]]]
```

Out[11]=



In[12]:= **Show[g1, g2]**



In[13]:= **Show[Plot3D[z /. fit, {x, -3, 3}, {y, -2, 2}, PlotRange → All],
ListPointPlot3D[data, PlotStyle → Directive[PointSize[Medium], Red]]]**

