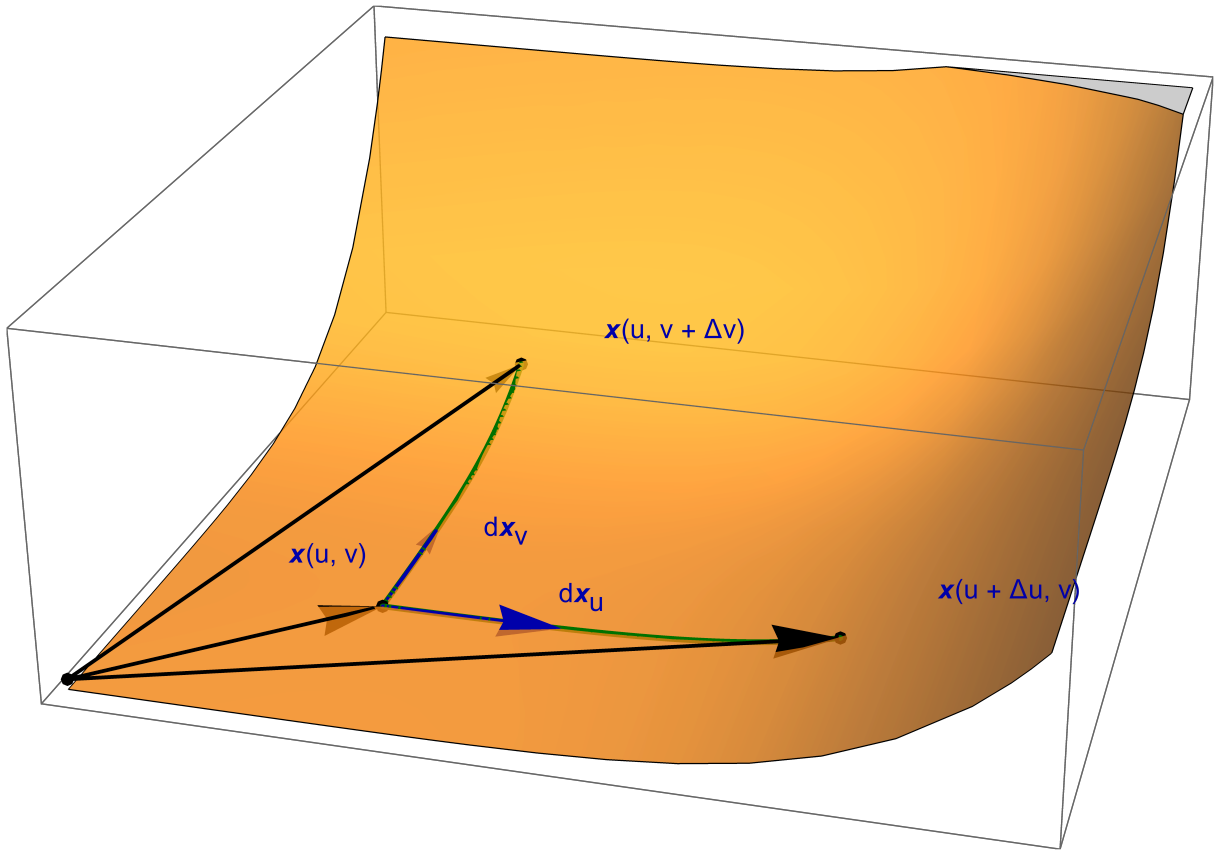
In[33]:=
```
ClearAll[o, f, vecFofXY, bold, fs, bxOfa, dxu, dxv, bxOfaDa, bxOfaDb,
 p, p2, pa, pb, g, x, y, dx, plotVecFvaryYfixedX, plotVecFvaryXfixedY]
o = {0, 0, 0};
f[x_, y_] = -4 + x^6 + 2 y^6 ;
vecFofXY[x_, y_] = {x, y, f[x, y]} ;
bold = Style[ #, Bold] &;
fs = 14;
bxOfa = Style[Row[{bold[x], "(u, v)"}], FontSize → fs] ;
bxOfaDa = Style[Row[{bold[x], "(u + Δu, v)"}], FontSize → fs] ;
bxOfaDb = Style[Row[{bold[x], "(u, v + Δv)"}], FontSize → fs] ;

t = Style[ #, FontSize → fs] &;
dx[v_, e_ : "", s_: ""] :=
  Row[{s // t, t["d"], Subscript[bold[x] // t, v // t], e // t}] ;
dxu = dx["u"];
dxv = dx["v"];


p = Plot3D[
    f[x, y], {x, 0, 2}, {y, 0, 2},
    PlotTheme → "ThickLines" ,
    Axes → None, Mesh → None, PlotStyle → Directive[Opacity[0.8] ]
  ] ;

plotVecFvaryYfixedX[l_, h_, x_] := ParametricPlot3D[ vecFofXY[x, y], {y, l, h},
   PlotTheme → "ThickLines", PlotStyle → Directive[Green // Darker // Darker]];
plotVecFvaryXfixedY[l_, h_, y_] := ParametricPlot3D[ vecFofXY[x, y], {x, l, h},
   PlotTheme → "ThickLines", PlotStyle → Directive[Green // Darker // Darker]];
pa = plotVecFvaryYfixedX[0.5, 1.5, 0.5];
pb = plotVecFvaryXfixedY[0.5, 1.5, 0.5];
pah = plotVecFvaryYfixedX[0.5, 1.5, 1.5];
pbh = plotVecFvaryXfixedY[0.5, 1.5, 1.5];

(*Callout doesn't appear to work for 3D plot*)
p2 = ListPointPlot3D[{
     (*Callout[lowlow,bxOfa, Above],
     Callout[highlow,bxOfaDa, Above],
     Callout[lowhigh,bxOfaDb, Above]*)
     lowlow,
     highlow,
     lowhigh,
     o
    },
```

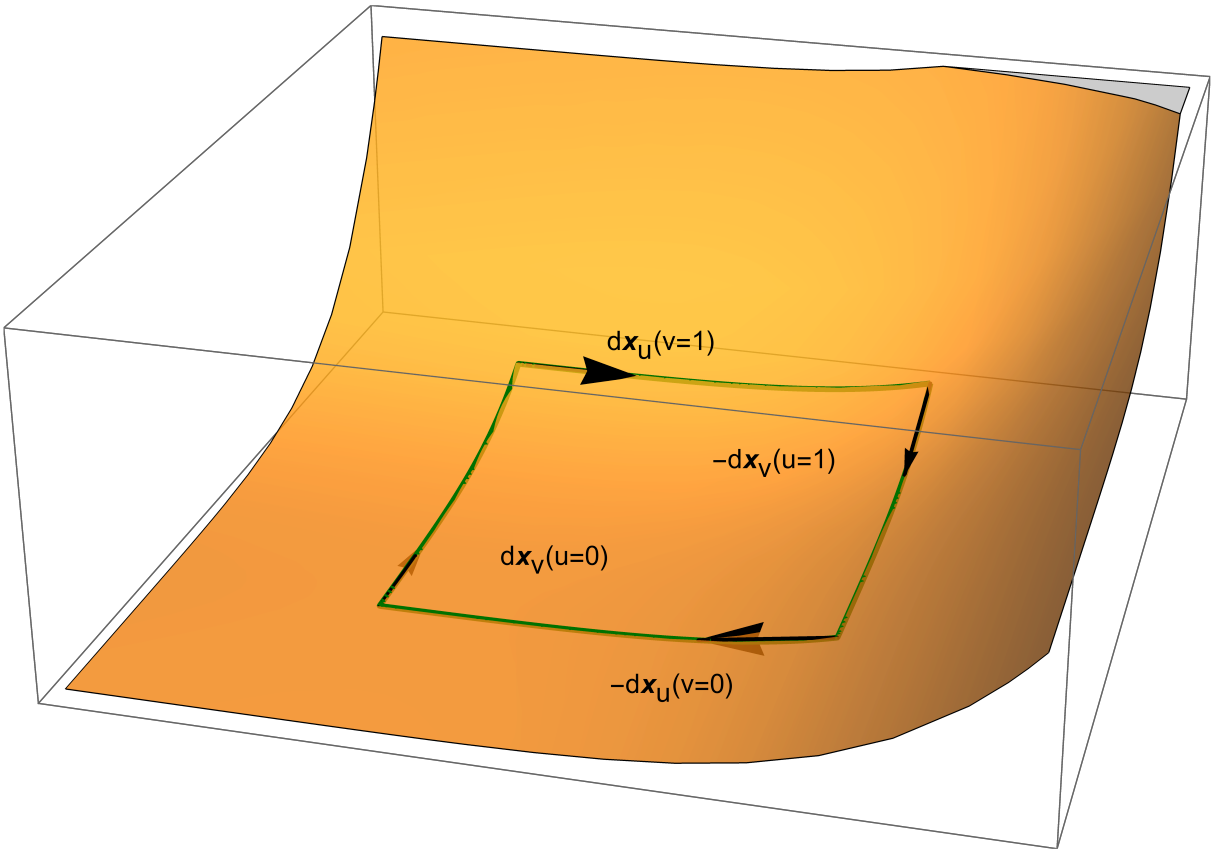
```
    PlotStyle → Directive[Black, PointSize[Large]]
  ] ;

low = 0.5;
high = 1.5;
lowlow = vecFofXY[low, low];
lowhigh = vecFofXY[low, high];
highlow = vecFofXY[high, low];
highhigh = vecFofXY[high, high];
g = Show[p, p2, pa, pb,
  Graphics3D[{
    Thick, Arrowheads[0.001],
    Arrow[{o, lowlow}],
    Arrow[{o, highlow}],
    Arrow[{o, lowhigh}],
    Blue // Darker,
    (*Arrowheads[0.01],*)
    Arrow[{lowlow, vecFofXY[0.5, 0.9]}],
    Arrow[{lowlow, vecFofXY[0.9, 0.5]}],
    Text[bxOfa, lowlow + {-1, 1, 0.1} 0.2],
    Text[bxOfaDa, highlow + {1, 1, 0} 0.3],
    Text[bxOfaDb, lowhigh + {1, 1, 0} 0.3],
    Text[dxv, vecFofXY[0.5, 0.9] + {1, 0, 0} 0.15],
    Text[dxu, vecFofXY[0.9, 0.5] + {0, 1, 0} 0.15]
   }]
 ]



g2 = Show[p, pa, pb, pah, pbh,
  Graphics3D[{
    Thick, Arrowheads[0.001],

    Arrow[{lowhigh, vecFofXY[low + 0.3, high]}],
    Arrow[{highhigh, vecFofXY[high, high - 0.3]}],
    Arrow[{lowlow, vecFofXY[low, low + 0.3]}],
    Arrow[{highlow, vecFofXY[high - 0.3, low]}],

    Text[ dx["u", "(v=1)"], vecFofXY[low + 0.3, high] + {0, 1, 0} 0.2],
    Text[dx["v", "(u=1)", "-"], vecFofXY[high, high - 0.3] - 0.3 {1, 0, 0}],
    Text[ dx["v", "(u=0)", ""], vecFofXY[low, low + 0.3] + 0.3 {1, 0, 0}],
    Text[dx["u", "(v=0)", "-"], vecFofXY[high - 0.3, low] - 0.2 {0, 1, 0}]

   }]
```

]

Out[60]=



Out[61]=



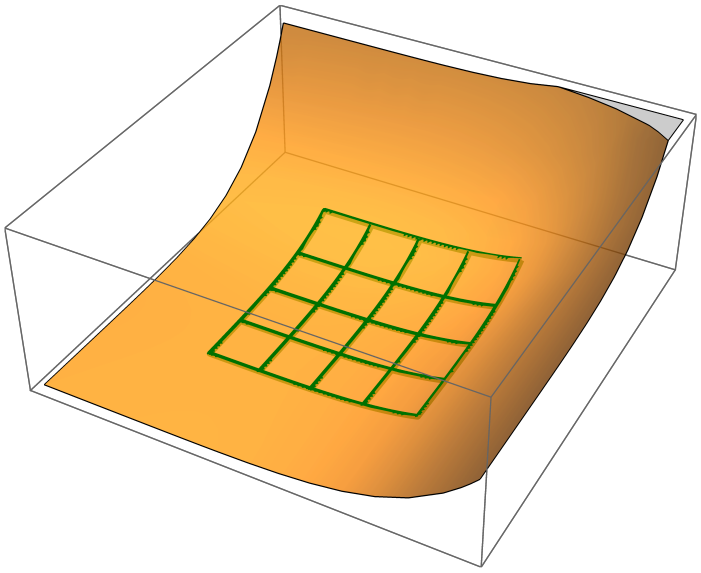
In[1]:=
```
<< peeters` ;
peeters`setGitDir[ "../project/figures/GAelectrodynamics" ]
```

Out[2]=
```
/Users/pjoot/project/figures/GAelectrodynamics
```

```
peeters`exportForLatex["twoParameterDifferentialFig1", g]
peeters`exportForLatex["twoParameterDifferentialBoundaryFig2", g2]
```

In[64]:=
```
g3 = Module[{r},
  r = (Range[5] + 1) / 4;
  Show[{p, plotVecFvaryYfixedX[0.5, 1.5, #] & /@ r,
     plotVecFvaryXfixedY[0.5, 1.5, #] & /@ r} // Flatten]
 ]
```

Out[64]=



```
peeters`exportForLatex["twoParameterDifferentialBoundaryFig3", g3]
```