

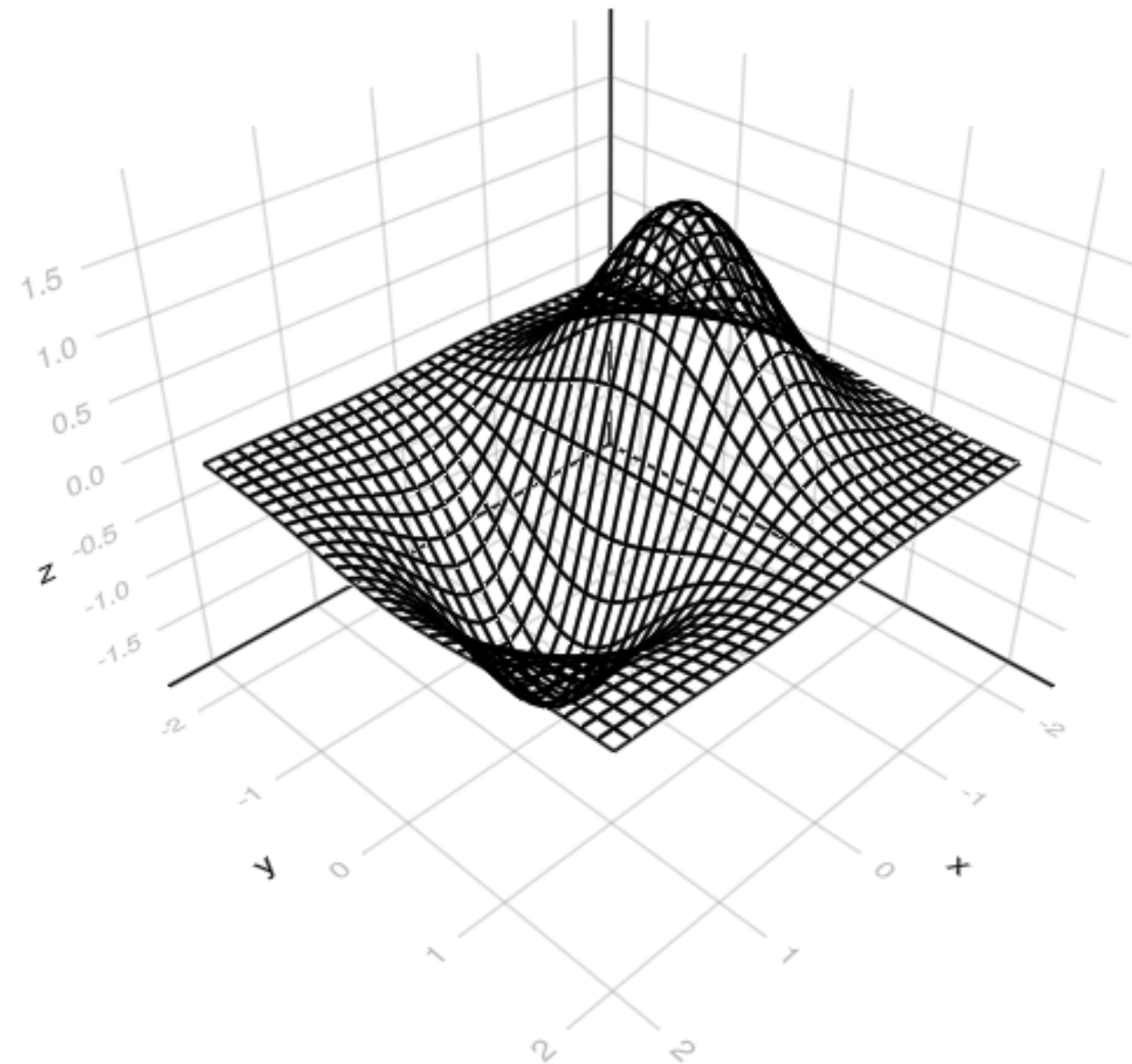
# Makie

## Basics: Axis3 & LScene

Danisch & Krumbiegel, (2021). Makie.jl: Flexible high-performance data visualization for Julia.  
Journal of Open Source Software, 6(65), 3349

```
x = y = range(-2, 2, length=31)
z = (-x .* exp(-x.^ 2 .- (y') .^ 2)) .* 4

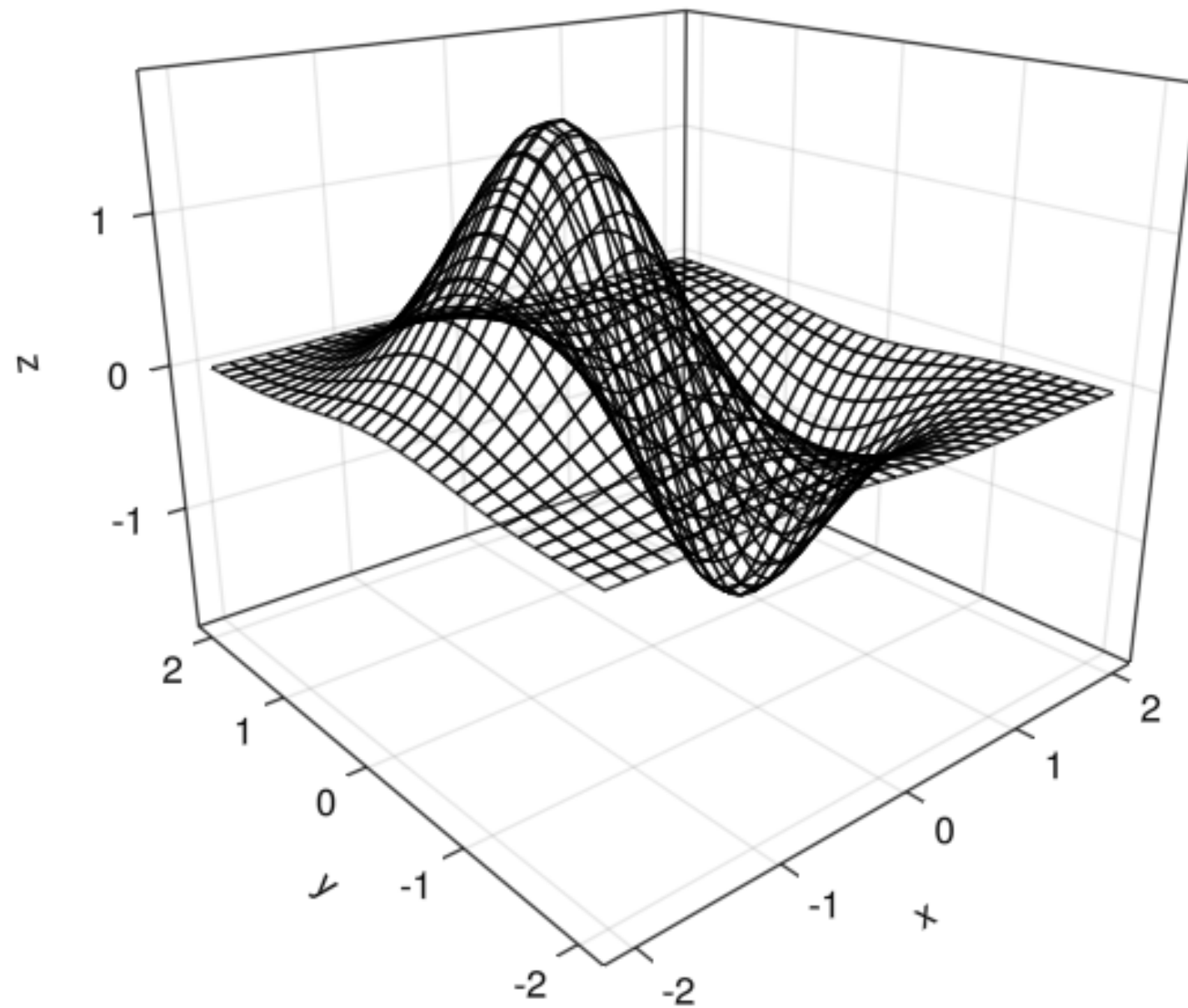
## 3d axis, default LScene
wireframe(x,y,z)
```



```

# Changing the axis type and color-drawing options,
# no zoom here.
wireframe(x,y,z;
  color = :black,
  transparency = true,
  overdraw = true,
  linewidth = 1,
  axis = (;
  type=Axis3,
  aspect = :data, # other (1,1,1)
  perspectiveness = 0.5,
  elevation =  $\pi$  / 9,
  )
)

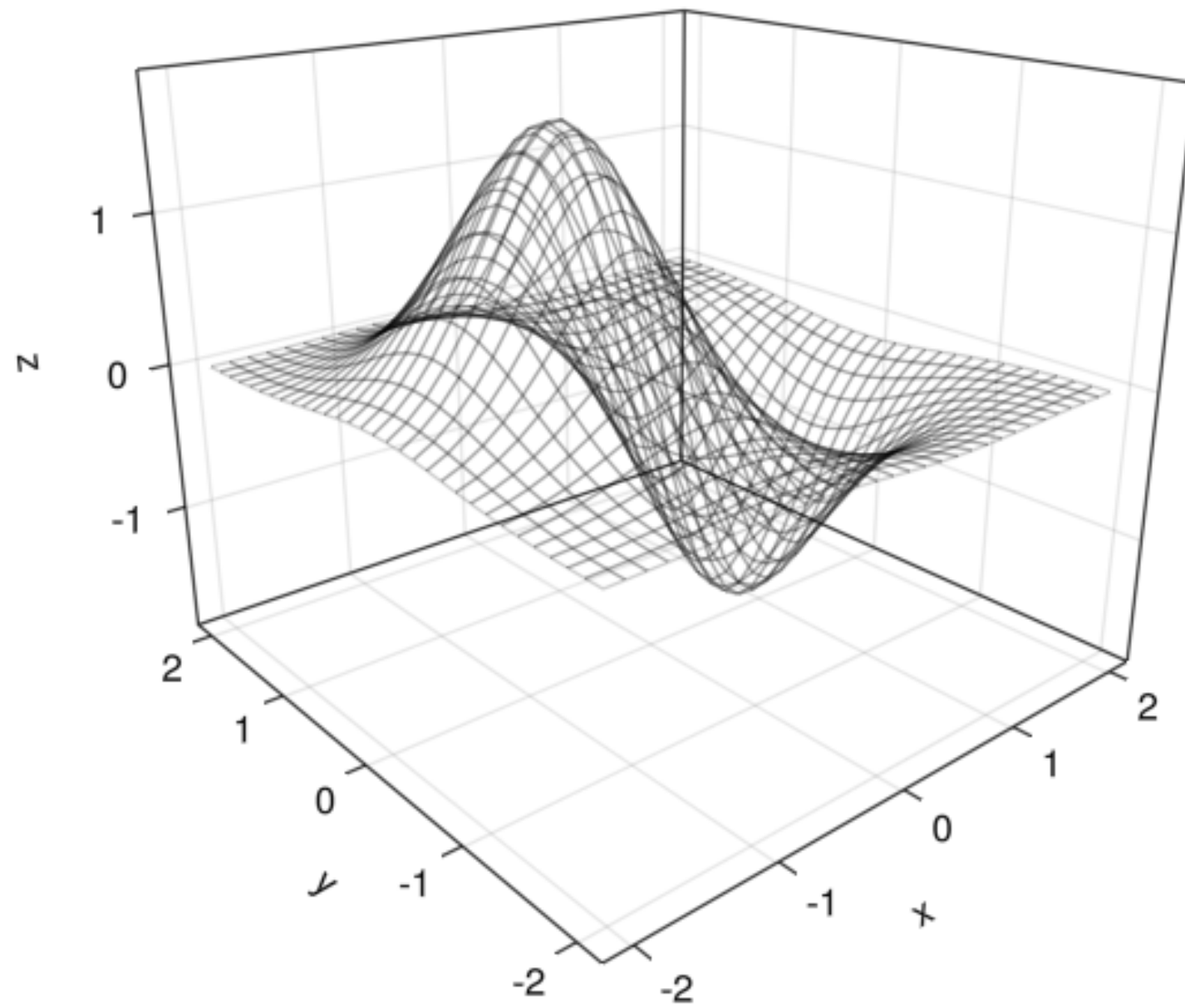
```



```

wireframe(x,y,z;
  color = (:black, 0.25),
  transparency = true,
  #overdraw = true,
  linewidth = 1,
  axis = (;
  type=Axis3,
  aspect = :data, # other (1,1,1)
  perspectiveness = 0.5,
  elevation =  $\pi$  / 9,
  )
)

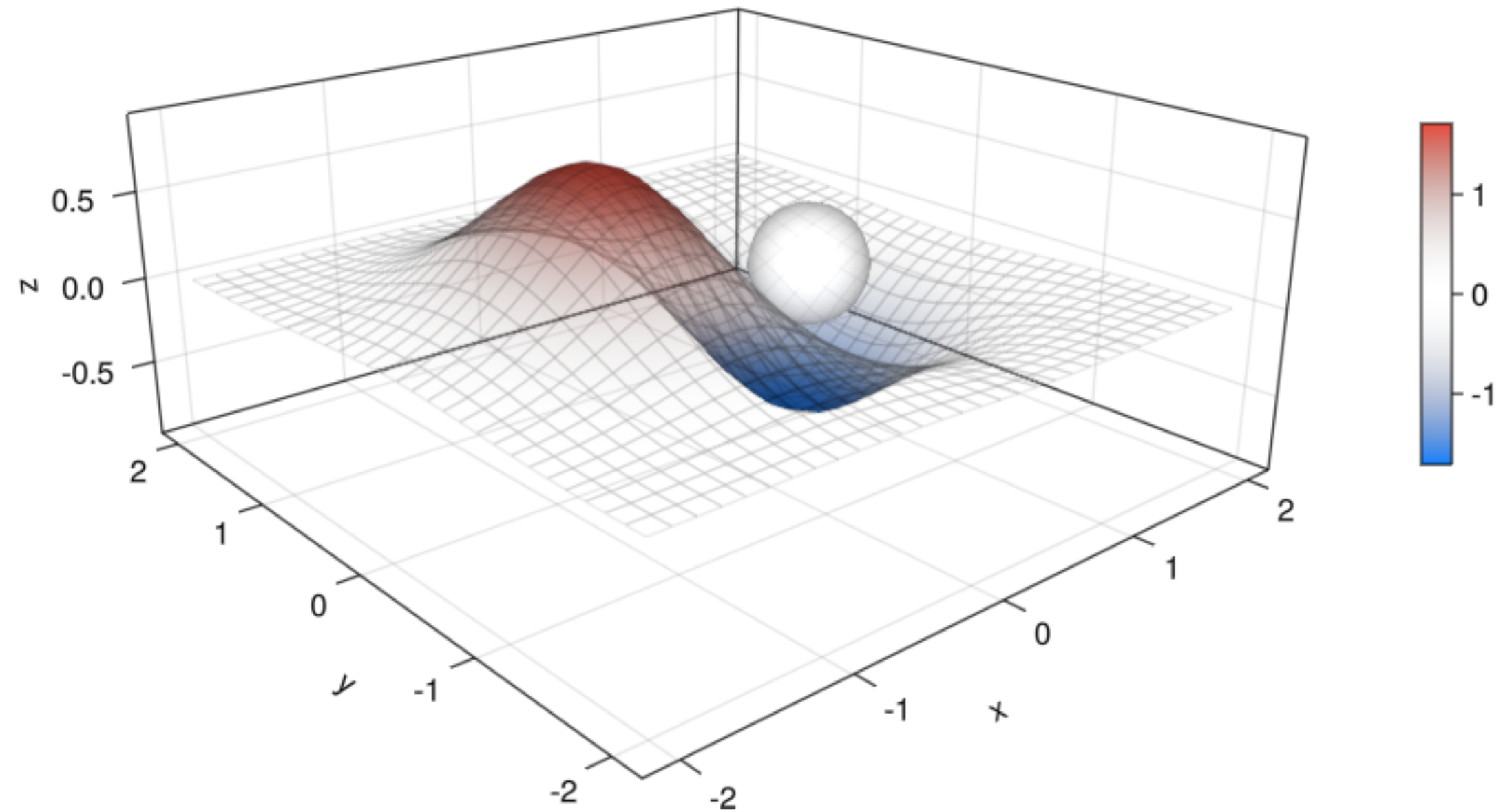
```



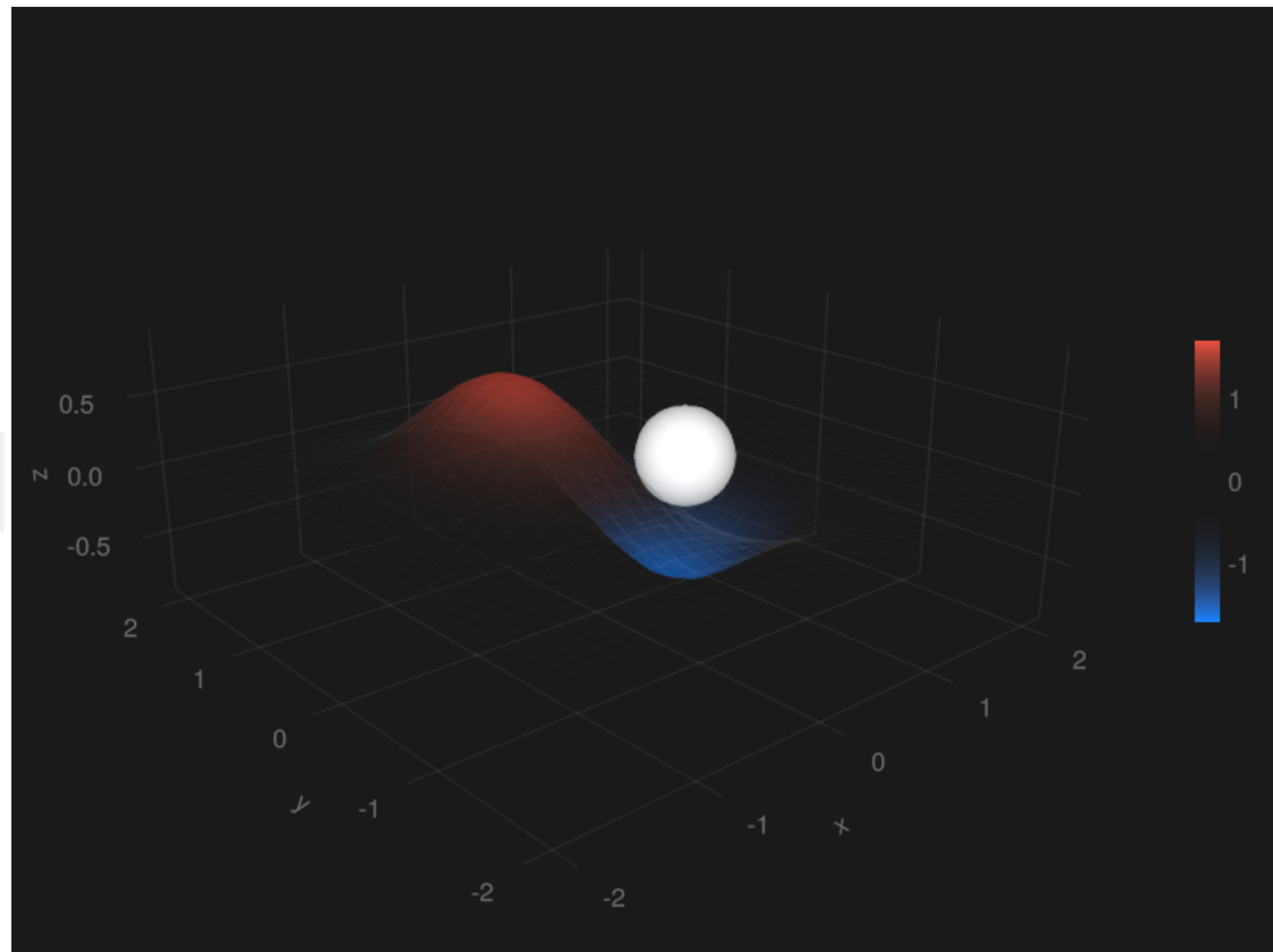
```

# Add more plots and some colour
ncolors = 40
α = range(-1,1,length=ncolors)
#lines(α.^2)
cmap = resample_cmap(:diverging_bkr_55_10_c35_n256,
    ncolors, alpha=α.^2)
function plotSurfaces(cmap; c = (:black, 0.1))
    fig, ax, obj = wireframe(x,y,z/2; color = c,
        transparency = true,
        #overdraw = true,
        linewidth = 1,
        axis = (;
            type=Axis3,
            aspect = :data, # other (1,1,1)
            perspectiveness = 0.5,
            elevation = π / 9,
        )
    )
    meshscatter!(Point3f(0.8,0,0); color = :white,
        markersize=0.35,transparency = true,backlight = 2f0)
    surface!(x,y,z/2; colormap = cmap, transparency =true)
    Colorbar(fig[1,2], colormap = cmap,
        colrange = extrema(z),
        height=Relative(0.35))
    #hidedecorations!(ax)
    #hidespines!(ax)
    fig
end
plotSurfaces(cmap)

```



```
with_theme(theme_dark()) do  
  plotSurfaces(cmap; c = (:white, 0.01))  
end
```

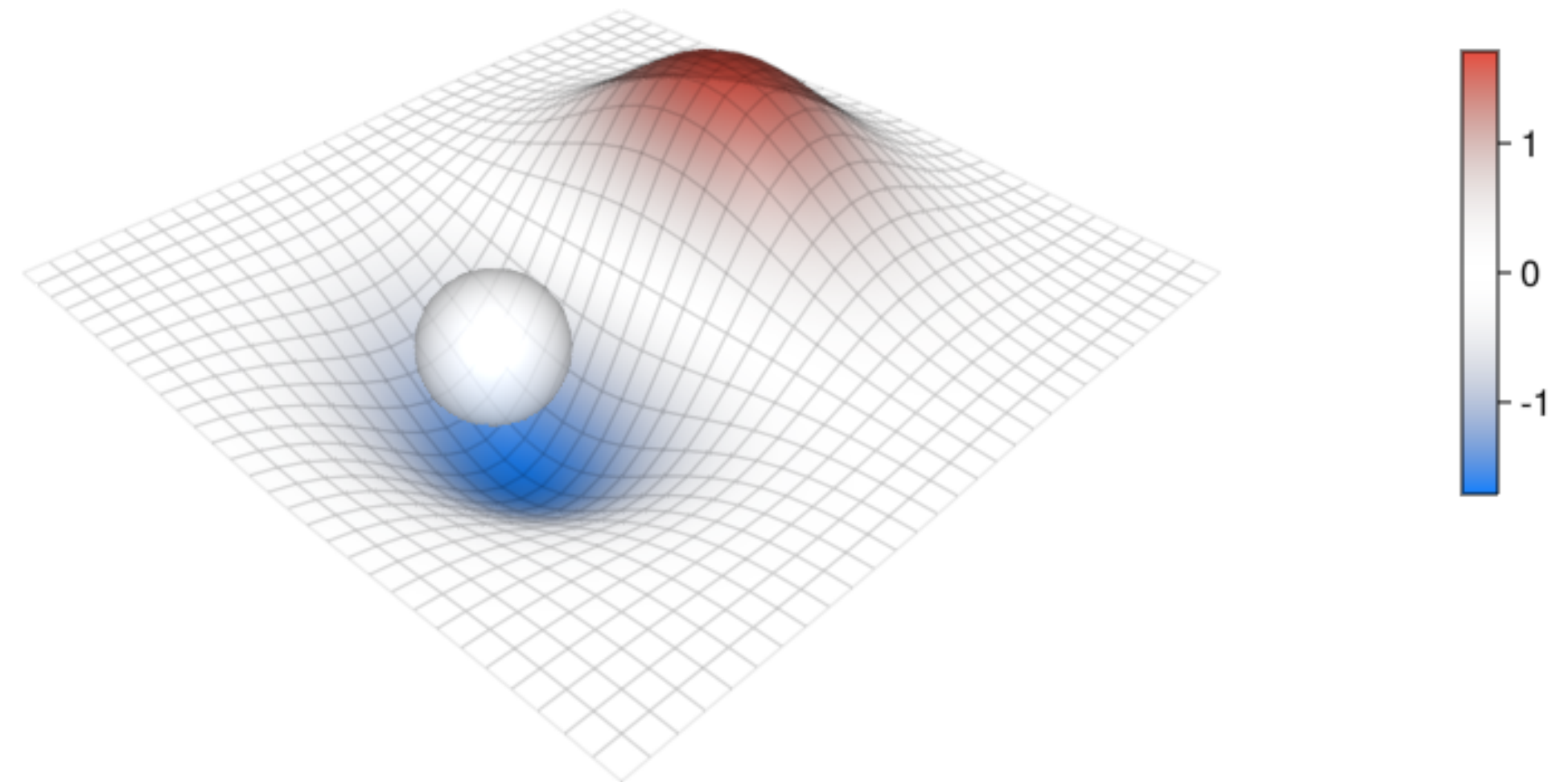




```

# With zoom, remove all Axis3 options and use an LScene
function plotSurfacesZoom(cmap; c = (:black, 0.1))
    fig = Figure()
    ax = LScene(fig[1,1], show_axis=false)
    wireframe!(ax, x,y,z/2; color = c, transparency = true,
        #overdraw = true,
        linewidth = 1,
    )
    meshscatter!(ax, Point3f(0.8,0,0); color = :white,
        markersize = 0.35, transparency = true,
        backlight = 2f0)
    surface!(ax, x,y,z/2; colormap = cmap, transparency =true)
    Colorbar(fig[1,2], colormap = cmap,
        colorrange = extrema(z), height=Relative(0.35))
    fig
end
plotSurfacesZoom(cmap)

```



```
with_theme(theme_dark()) do  
  plotSurfacesZoom(cmap; c = (:white, 0.01))  
end
```

