Makie

Basics: Axis3 & LScene

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

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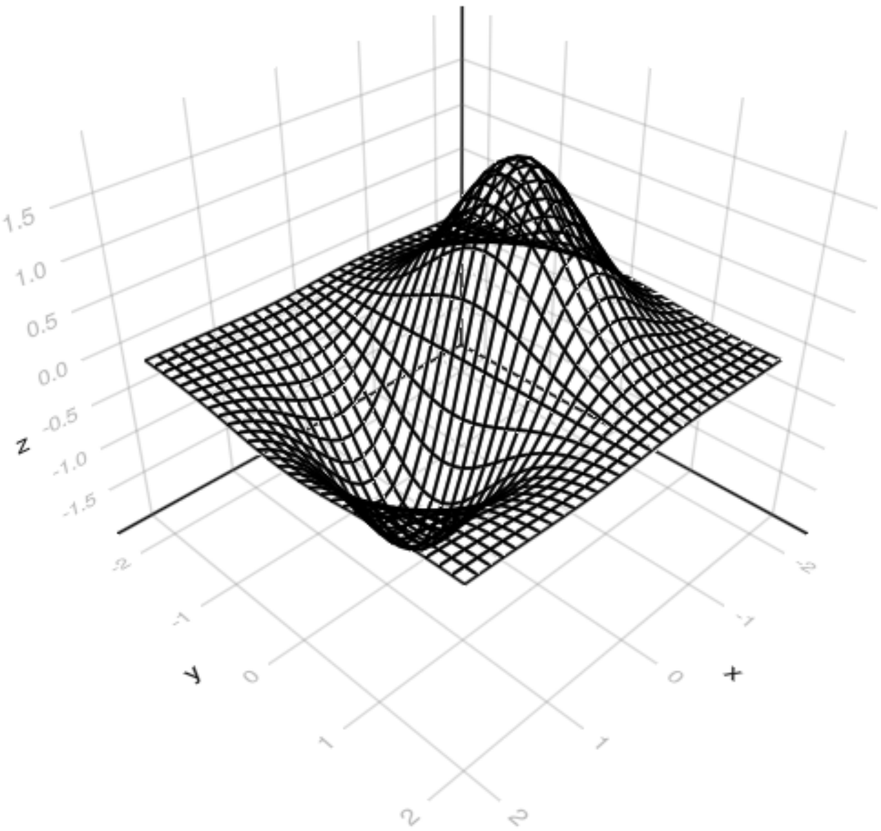
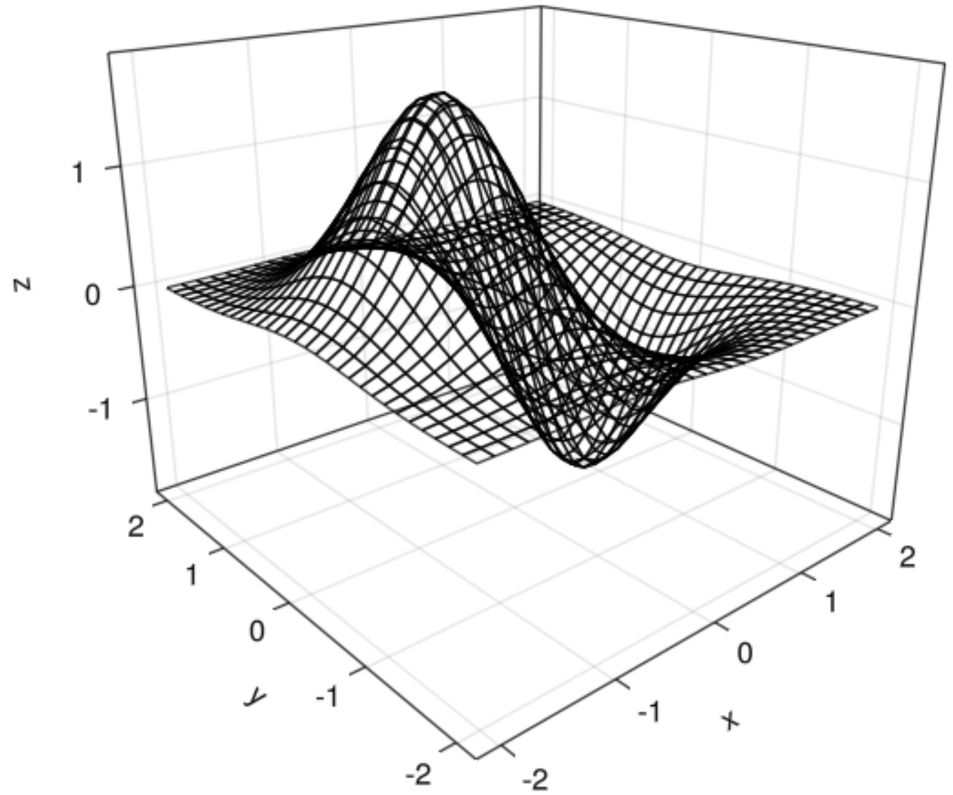
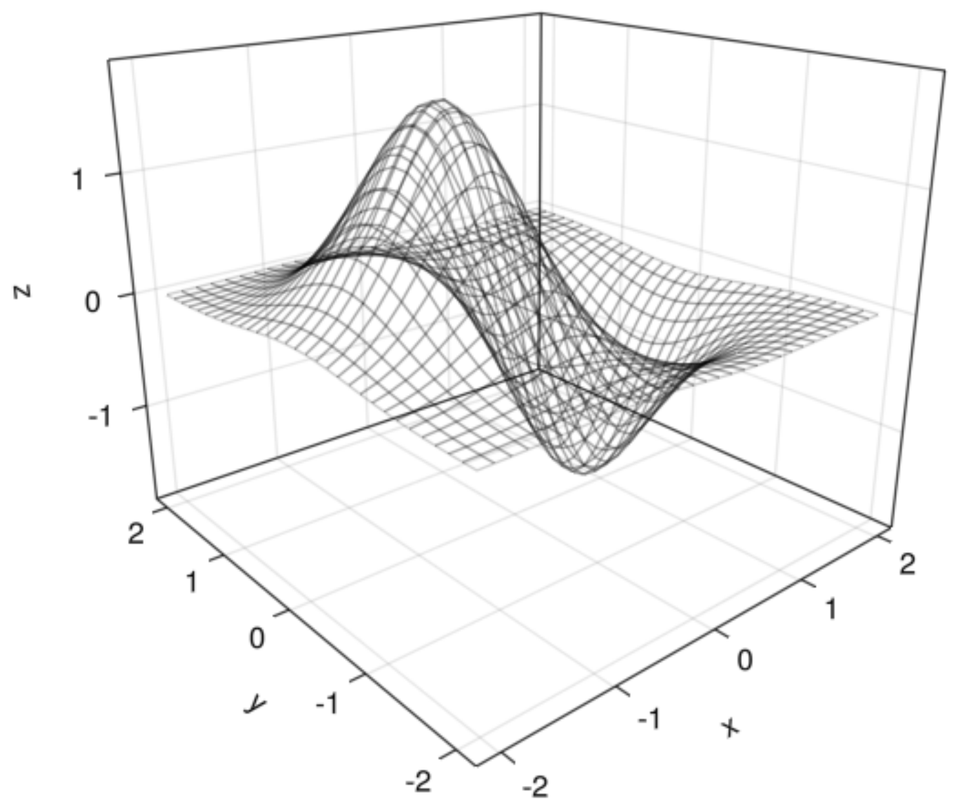
```
x = y = range(-2, 2, length=31)
z = (-x .* exp.(-x .^ 2 .- (y') .^ 2)) .* 4

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



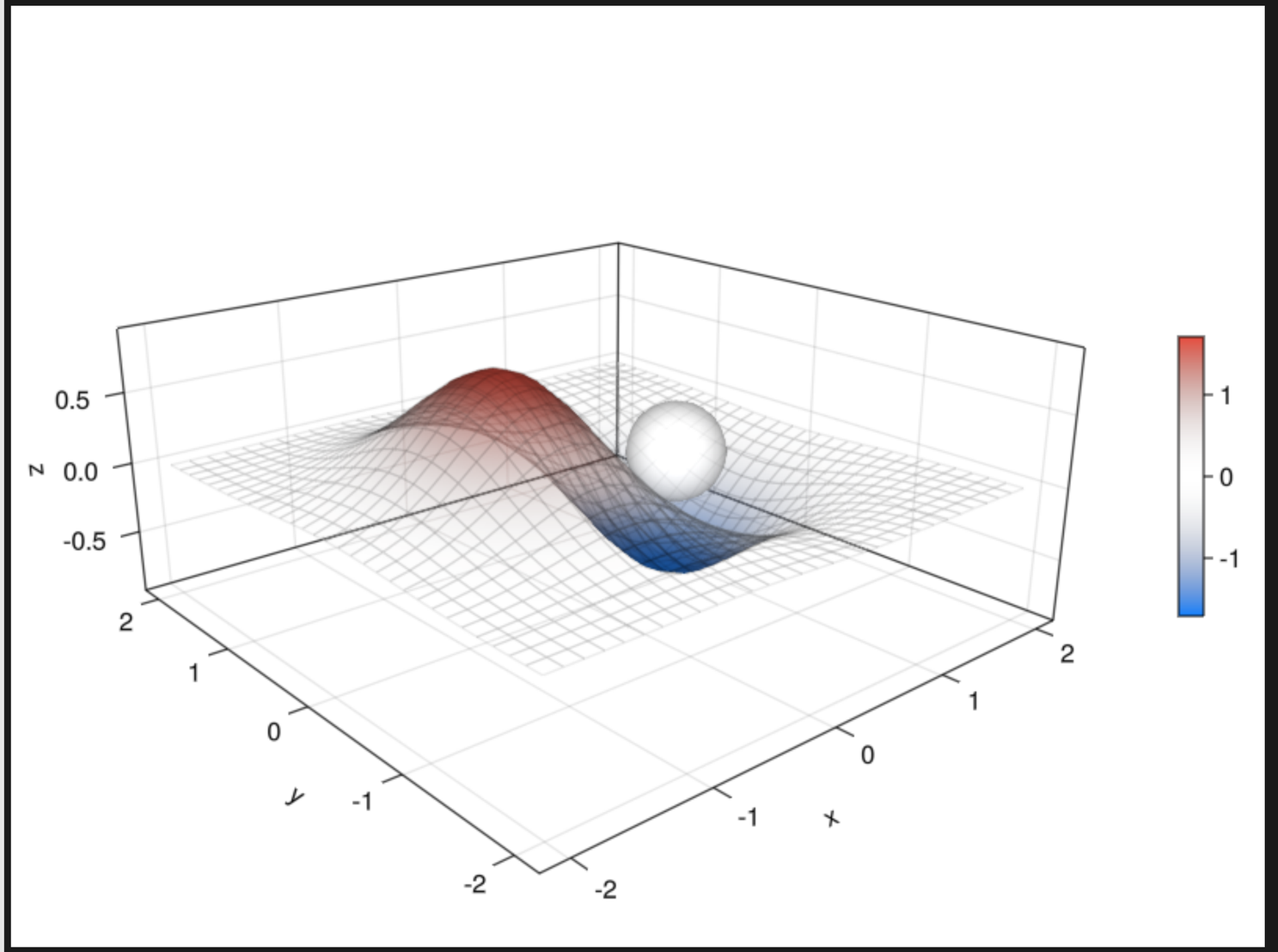
```
# Changing the axis type and color-drawing options,
# no zoom here.
wireframe(x,y,z;
    color = :black,
    transparency = true,
    overdraw = true,
    linewidth = 1,
    axis = (;
    type=Axis3,
    aspect = :data, # other (1,1,1)
    perspectiveness = 0.5,
    elevation = π / 9,
    )
)
```



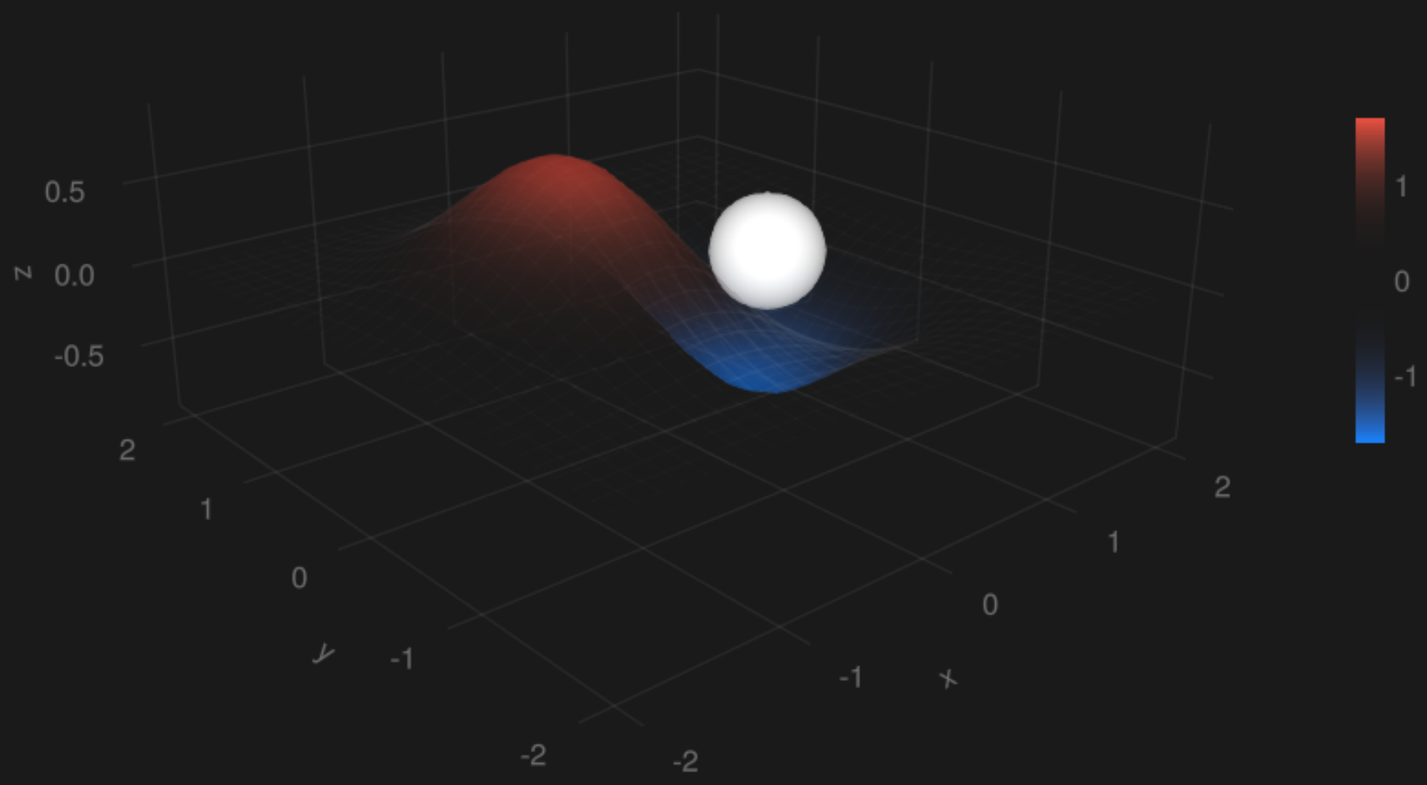
```
wireframe(x,y,z;
    color = (:black, 0.25),
    transparency = true,
    #overdraw = true,
    linewidth = 1,
    axis = (;
    type=Axis3,
    aspect = :data, # other (1,1,1)
    perspectiveness = 0.5,
    elevation = π / 9,
    )
)
```



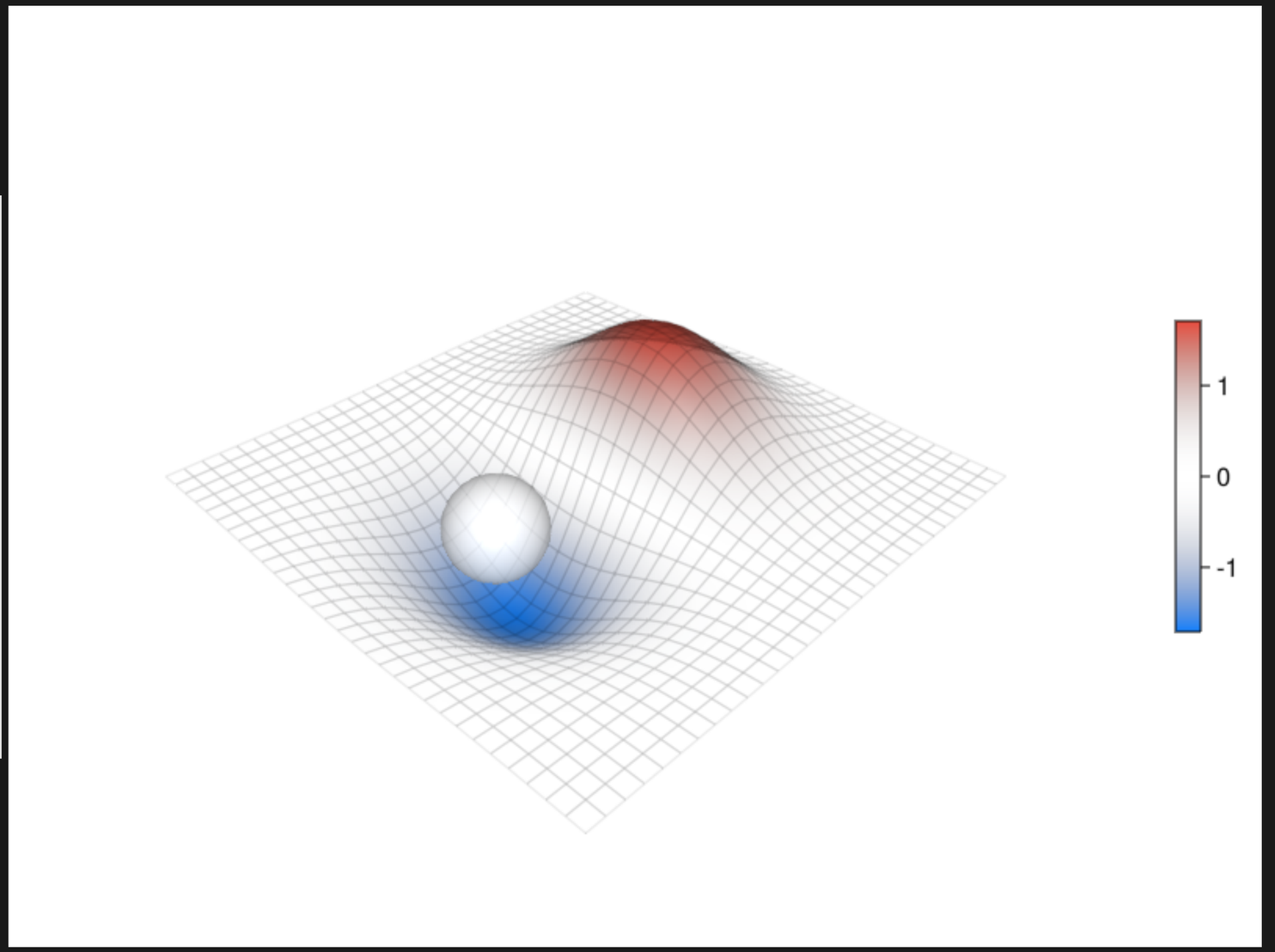
```julia
# Add more plots and some colour
ncolors = 40
α = range(-1,1,length=ncolors)
#lines(α.^2)
cmap = resample_cmap(:diverging_bkr_55_10_c35_n256,
    ncolors, alpha=α.^2)
function plotSurfaces(cmap; c = (:black, 0.1))
    fig, ax, obj = wireframe(x,y,z/2; color = c,
        transparency = true,
        #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,
        colorrange = 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
```