Comparison of dislocation fields

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The C++ code


```
    fclose(fd);
}

void PeriodicShearStressELTE::outPutStress(){

    float resolution = 0.005;

    for(float i = -0.5; i < 0.5; i += resolution){
        for(float j = -0.5; j < 0.5; j += resolution){
            fout << xy(i, j) << ";";
        }
        fout << "\n";
    }

}

double PeriodicShearStressELTE::xy(double x, double y)
```

Did not change.

Visualization, log scale

This changed heavily.

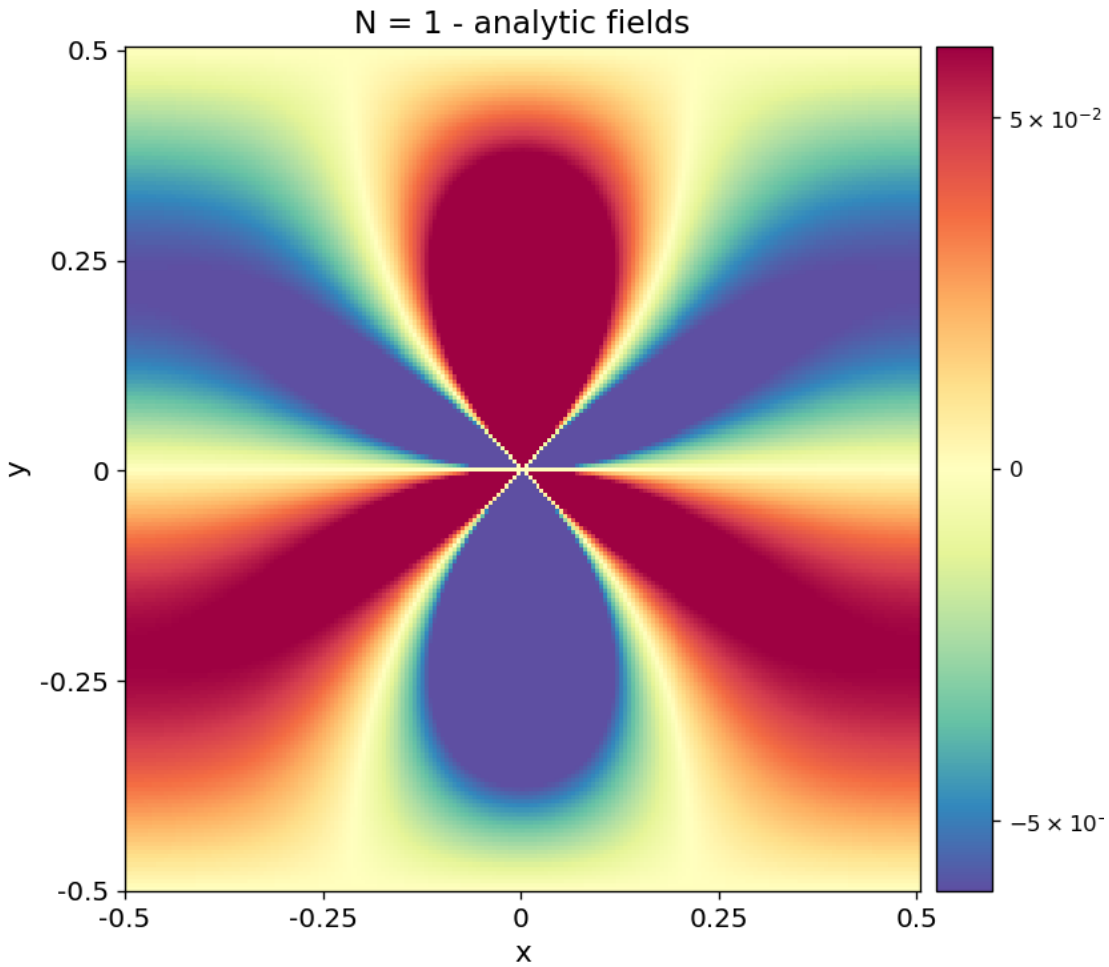
```
plt.title("ELTE stress field", fontdict={"fontsize": 14})
plt.xlabel("x", fontdict={"fontsize": 13})
plt.ylabel("y", fontdict={"fontsize": 13})

plt.xticks(np.arange(0, img.shape[0], img.shape[0] // 4),
               ('-0.5', '-0.25', '0', '0.25', '0.5'), size=12)
plt.yticks(np.arange(0, img.shape[1], img.shape[1] // 4),
               ('-0.5', '-0.25', '0', '0.25', '0.5'), size=12)


pcm = ax.pcolor(img,
                norm=colors.SymLogNorm(linthresh=0.2, linscale=0.2,
                                       vmin=np.min(img)[0], vmax=np.max(img)[0]),
                cmap=plt.cm.Spectral_r)

divider = make_axes_locatable(ax)
cax = divider.append_axes("right", size="7%", pad="2%")

cb = plt.colorbar(pcm, cax=cax)
tick_locator = ticker.MaxNLocator(nbins=5)
cb.locator = tick_locator
cb.update_ticks()

plt.savefig('elte_stress_field.png', dpi=120)
```

Visualization, log scale

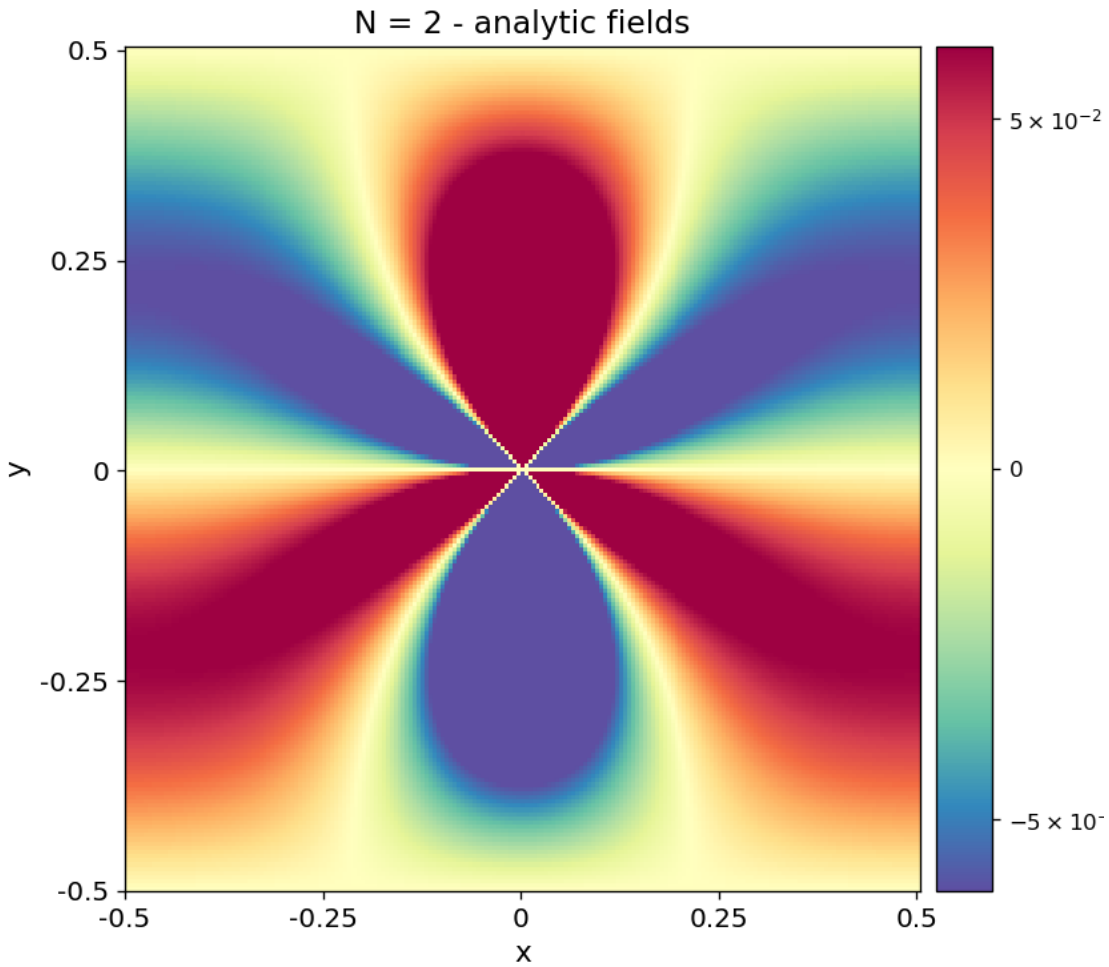
I used symmetric logarithmic scale with different thresholds based on the data. Therefore I could visualize negative and positive values with different, diverging colors.

That's the reason why the plots look so cool.

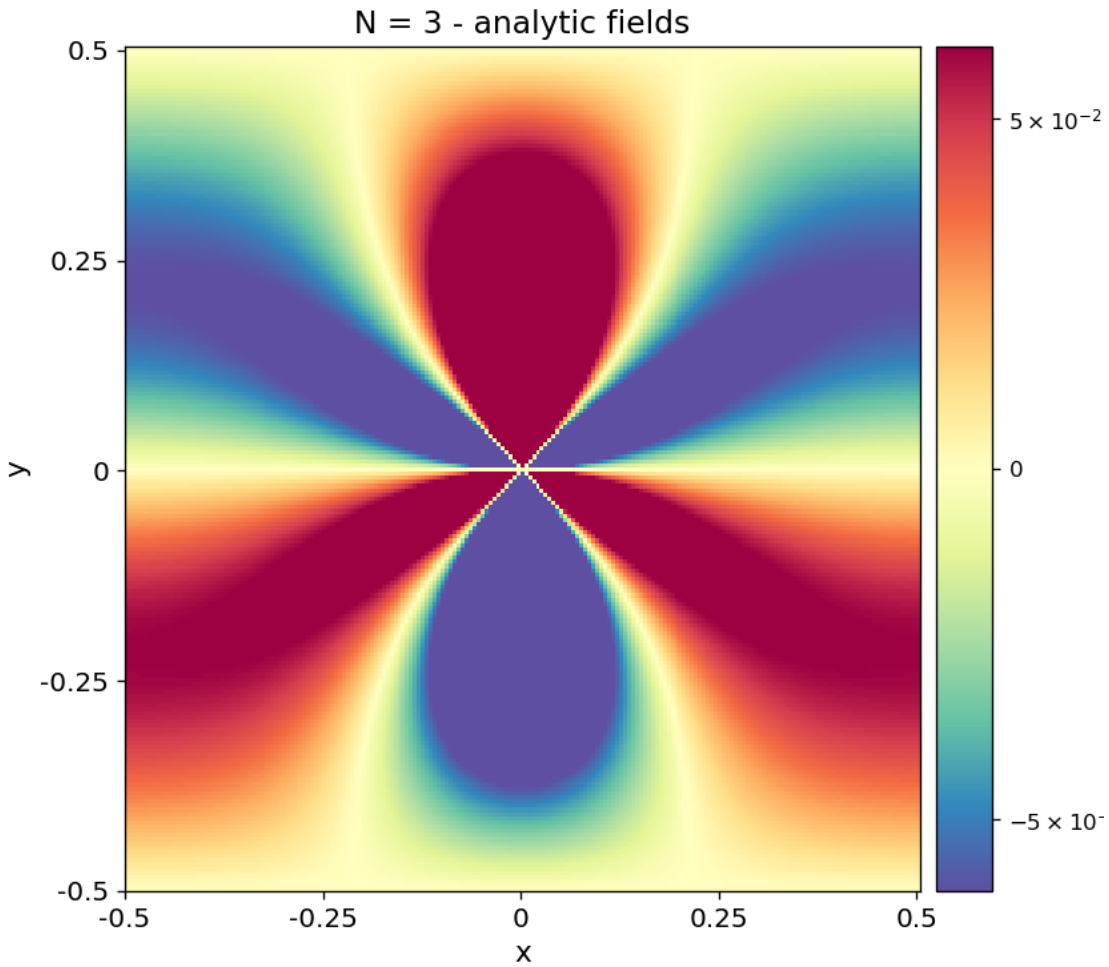
Plot 1



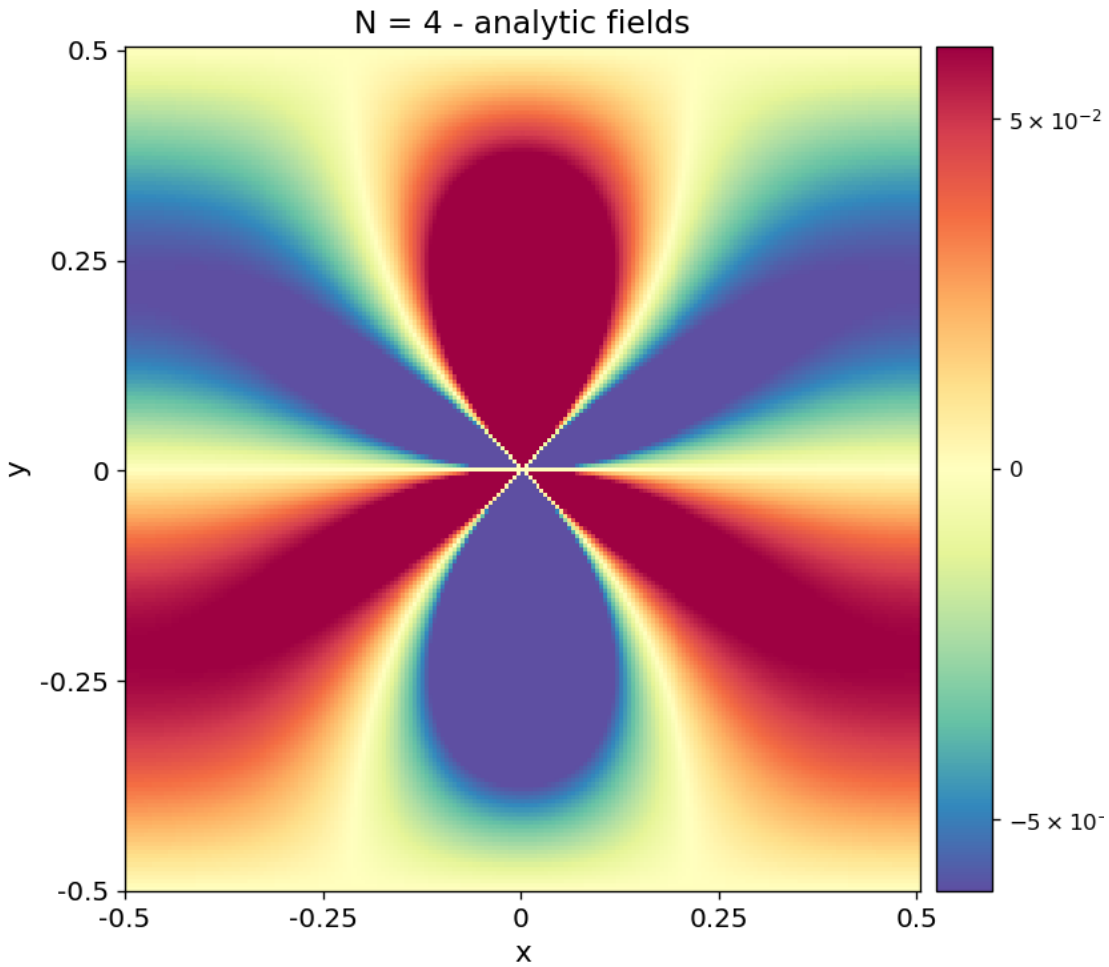
Plot 2



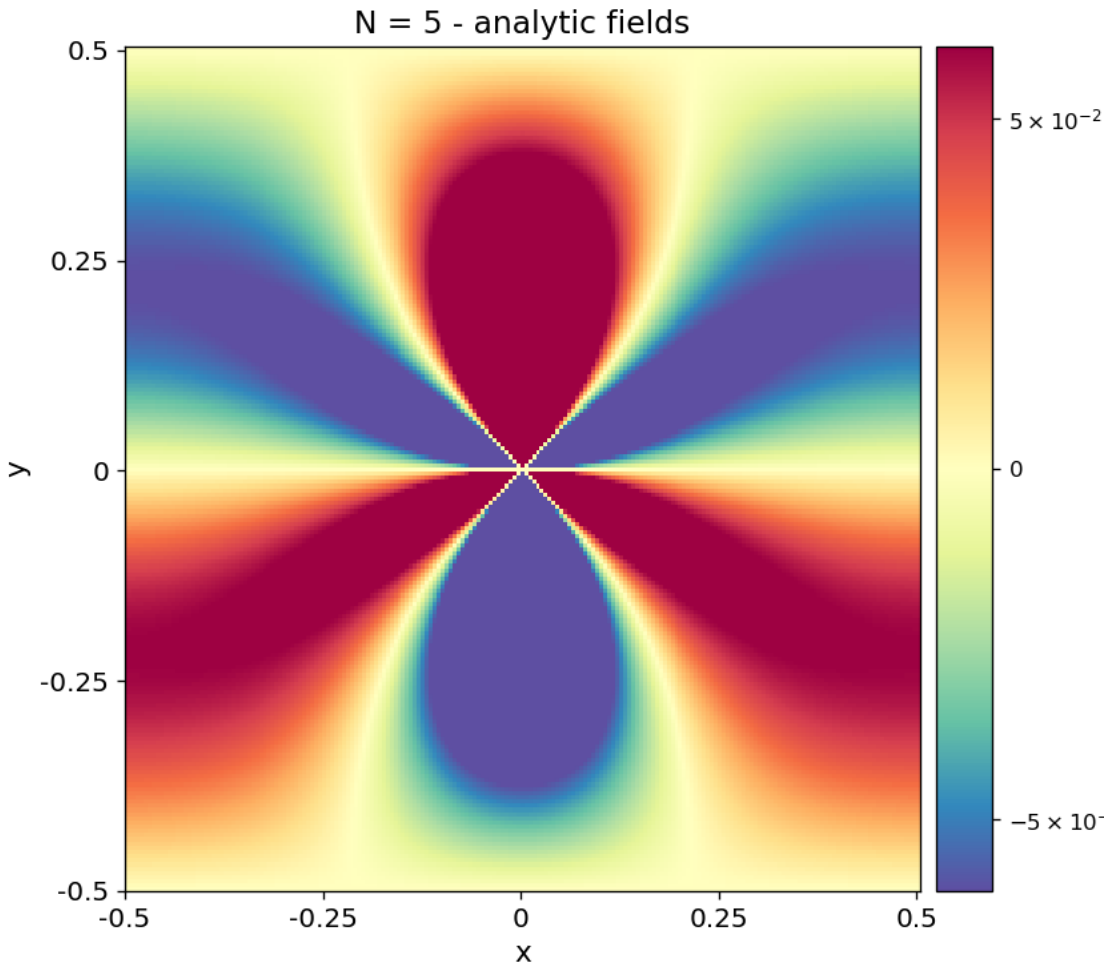
Plot 3



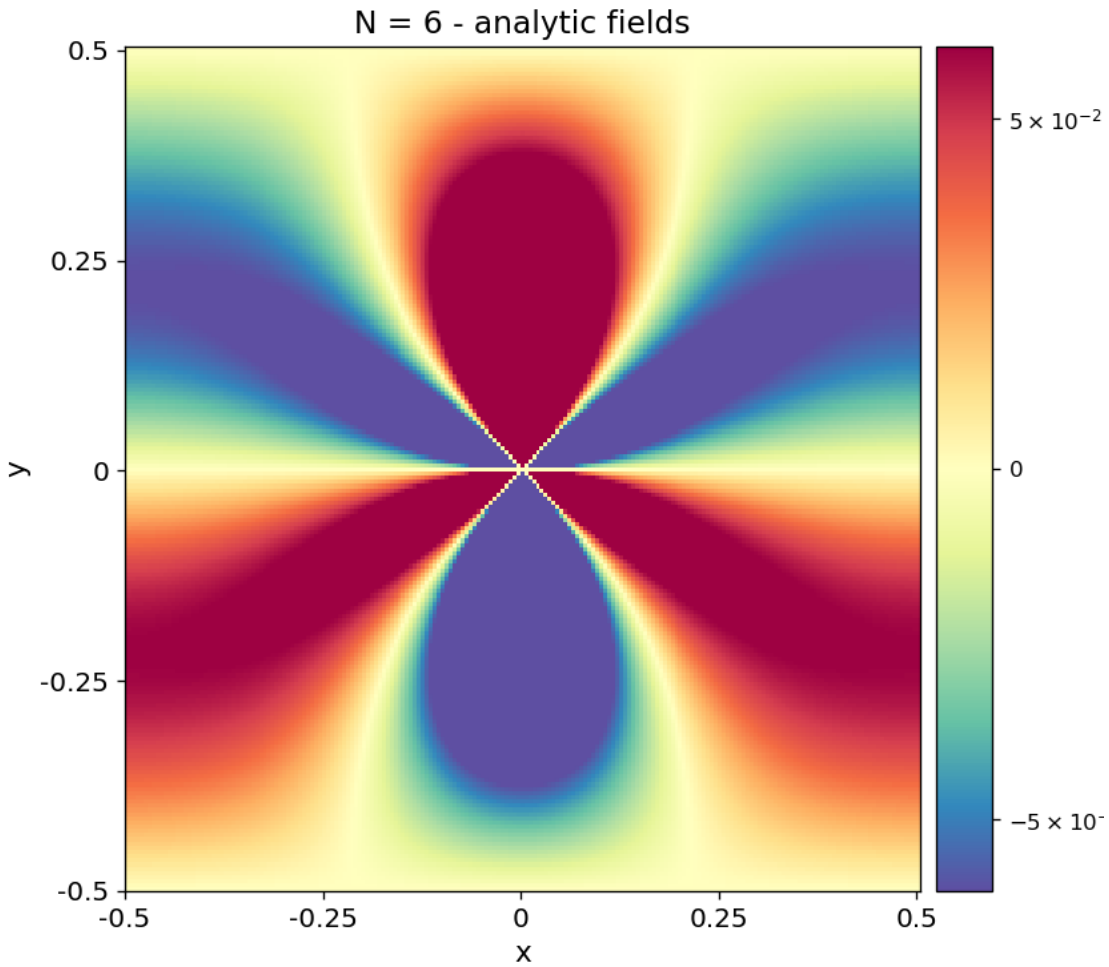
Plot 4



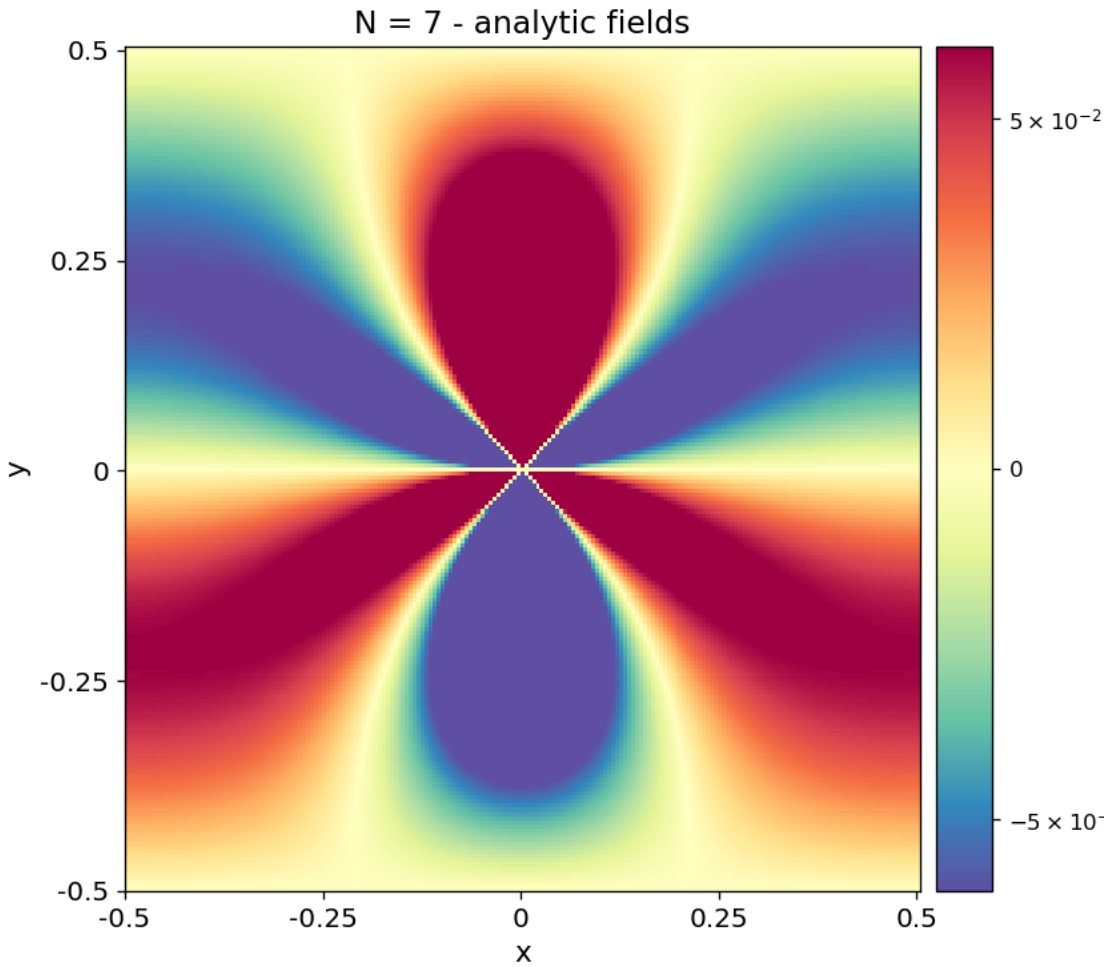
Plot 5



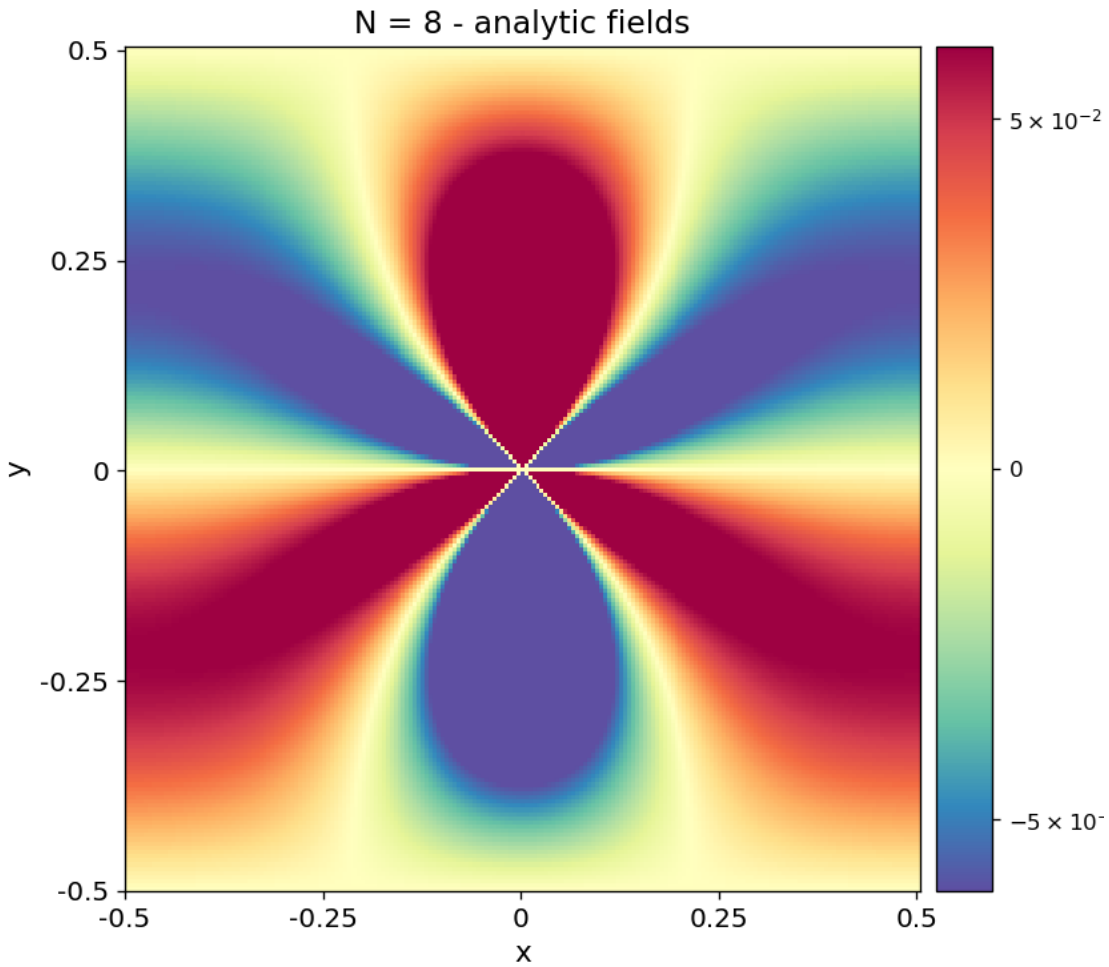
Plot 6



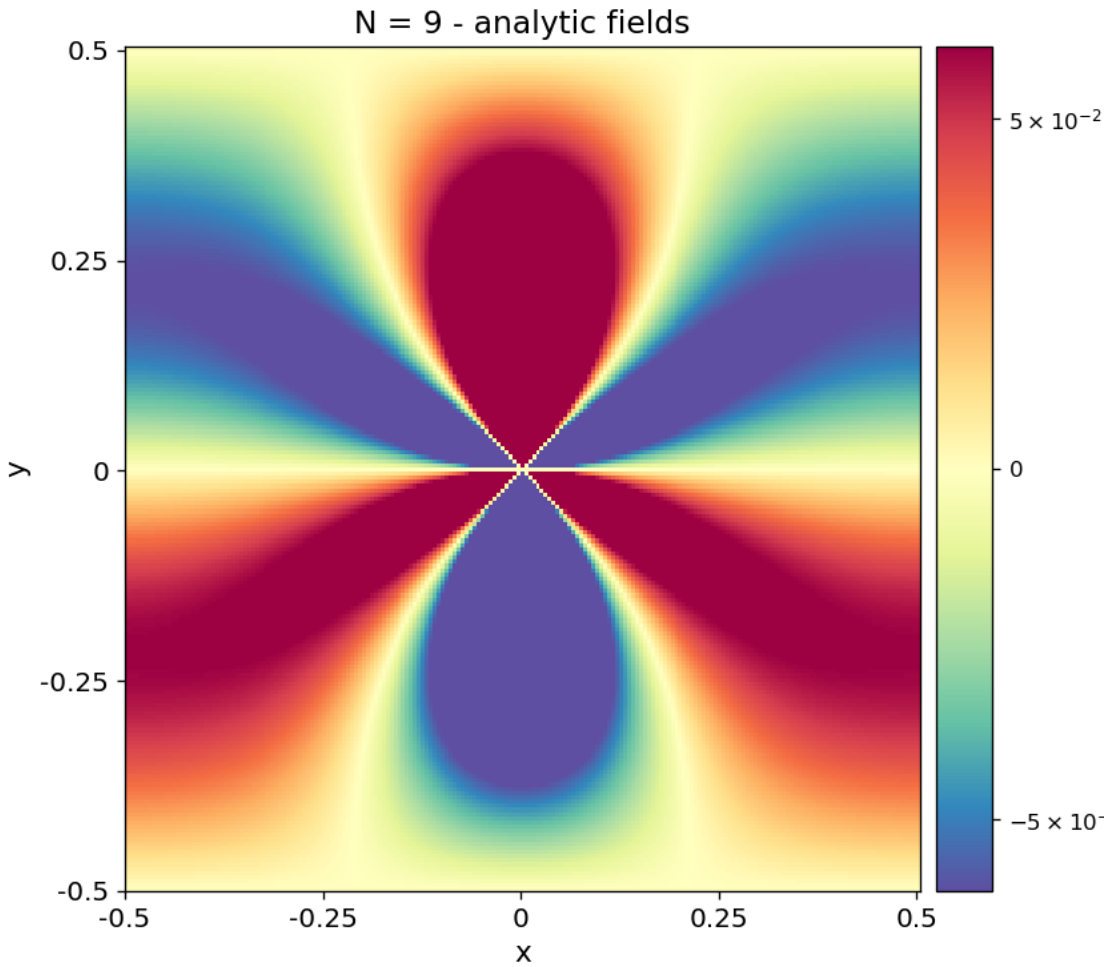
Plot 7



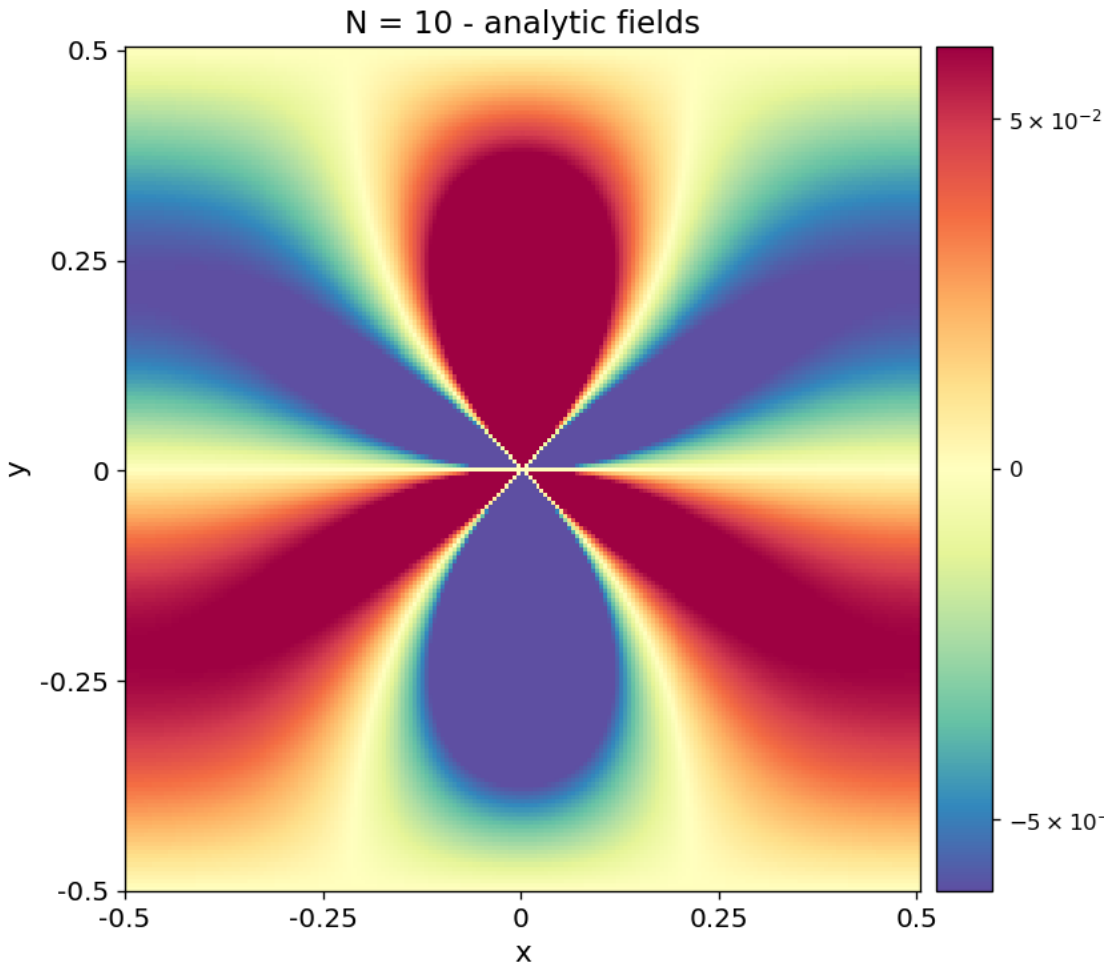
Plot 8



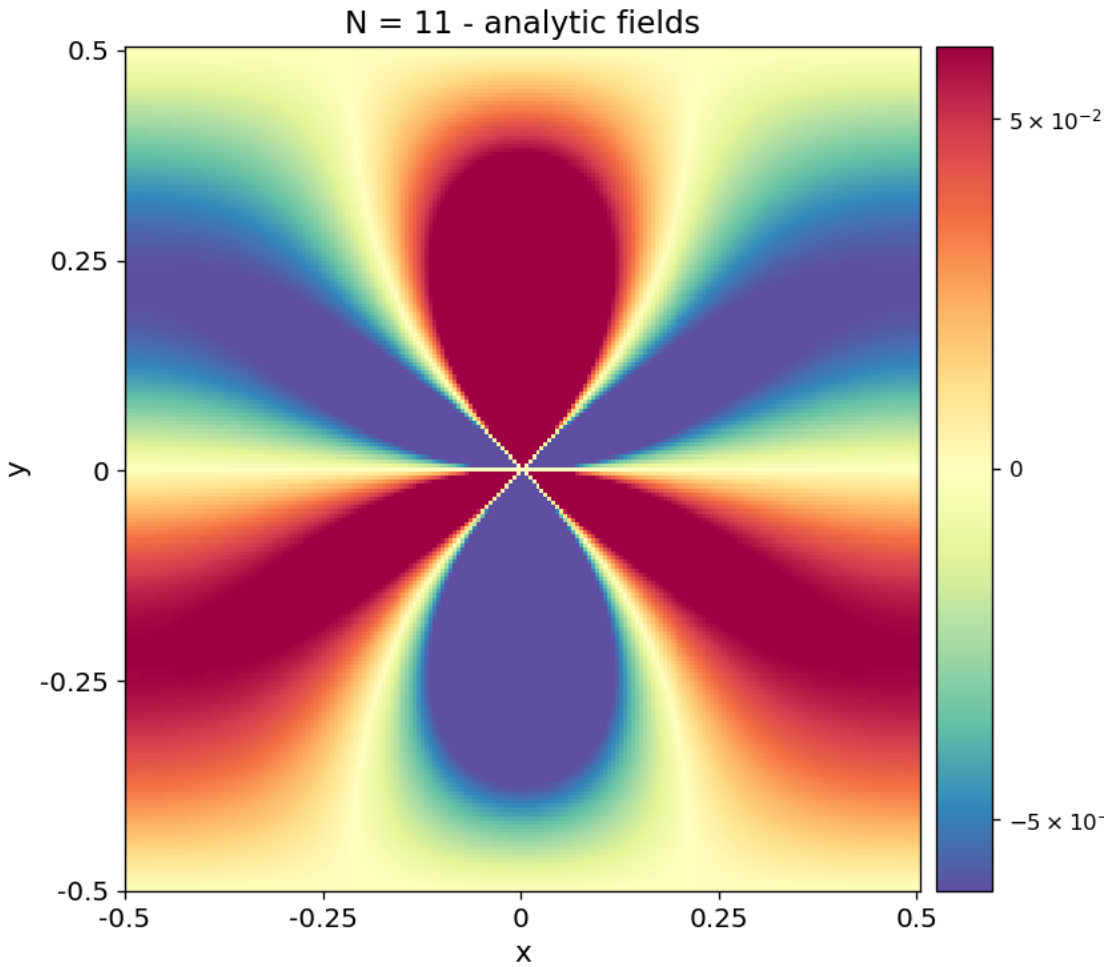
Plot 9



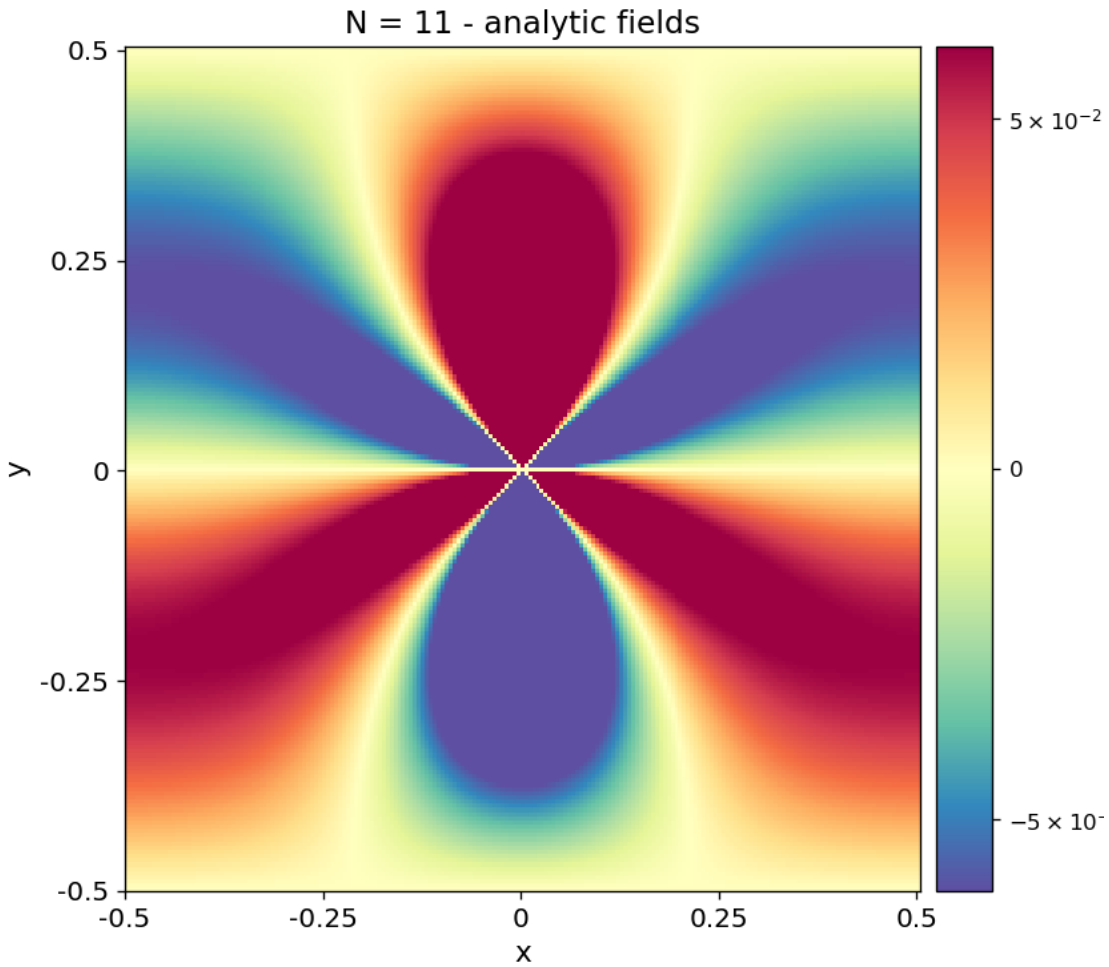
Plot 10



Plot 11



Plot 12



Difference of analytic fields

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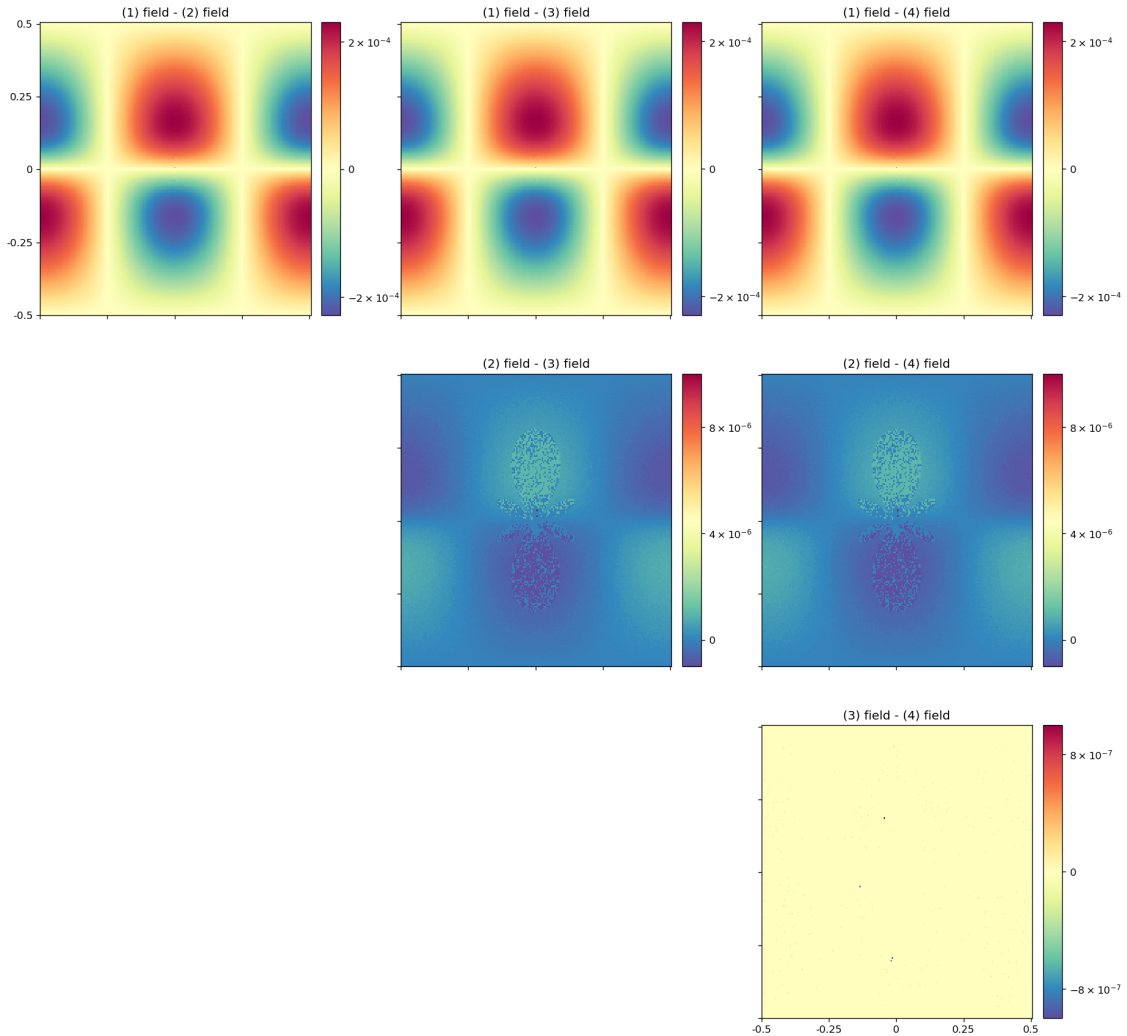
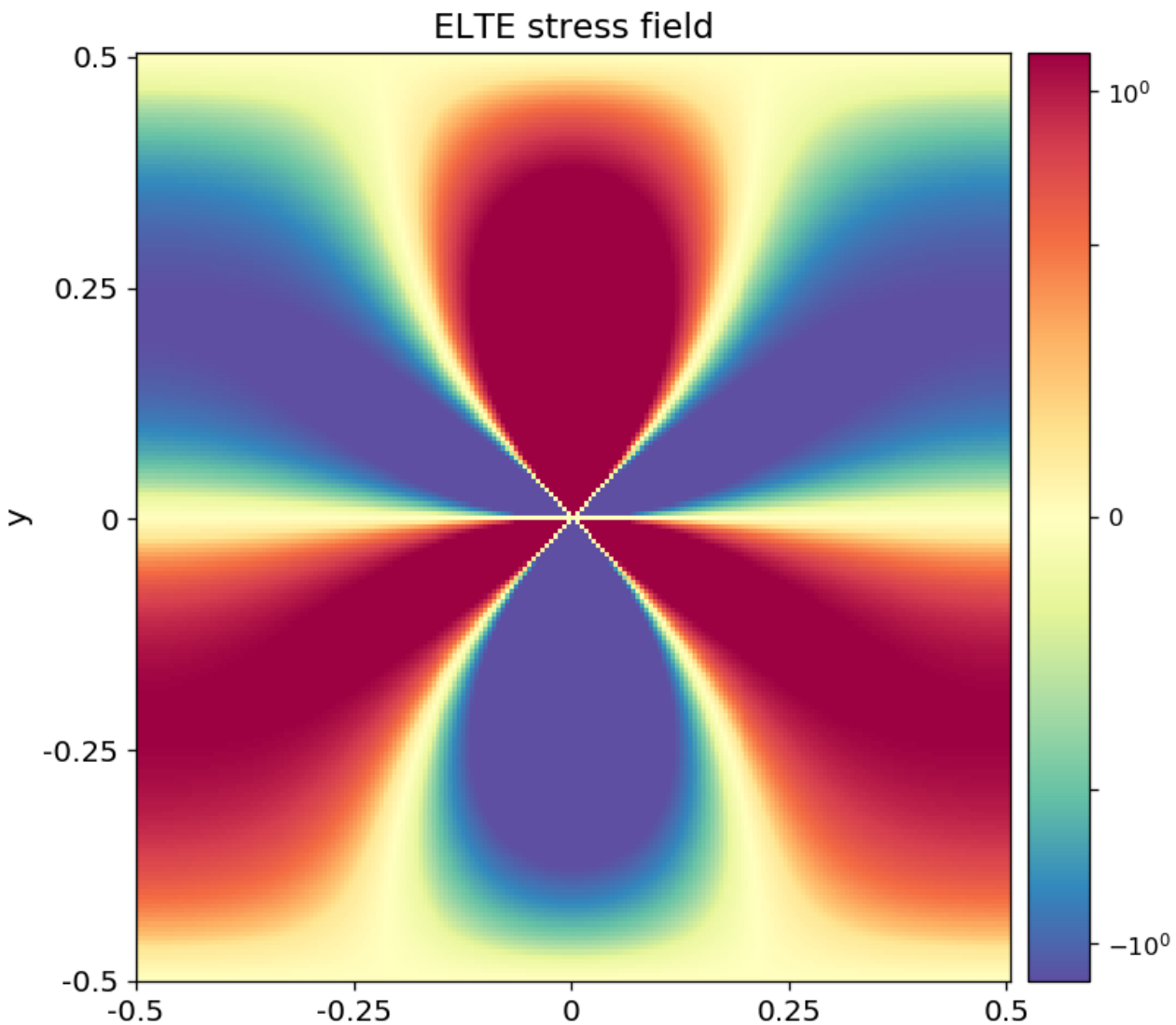


ELTE stress field



Difference of analytic fields with ELTE field

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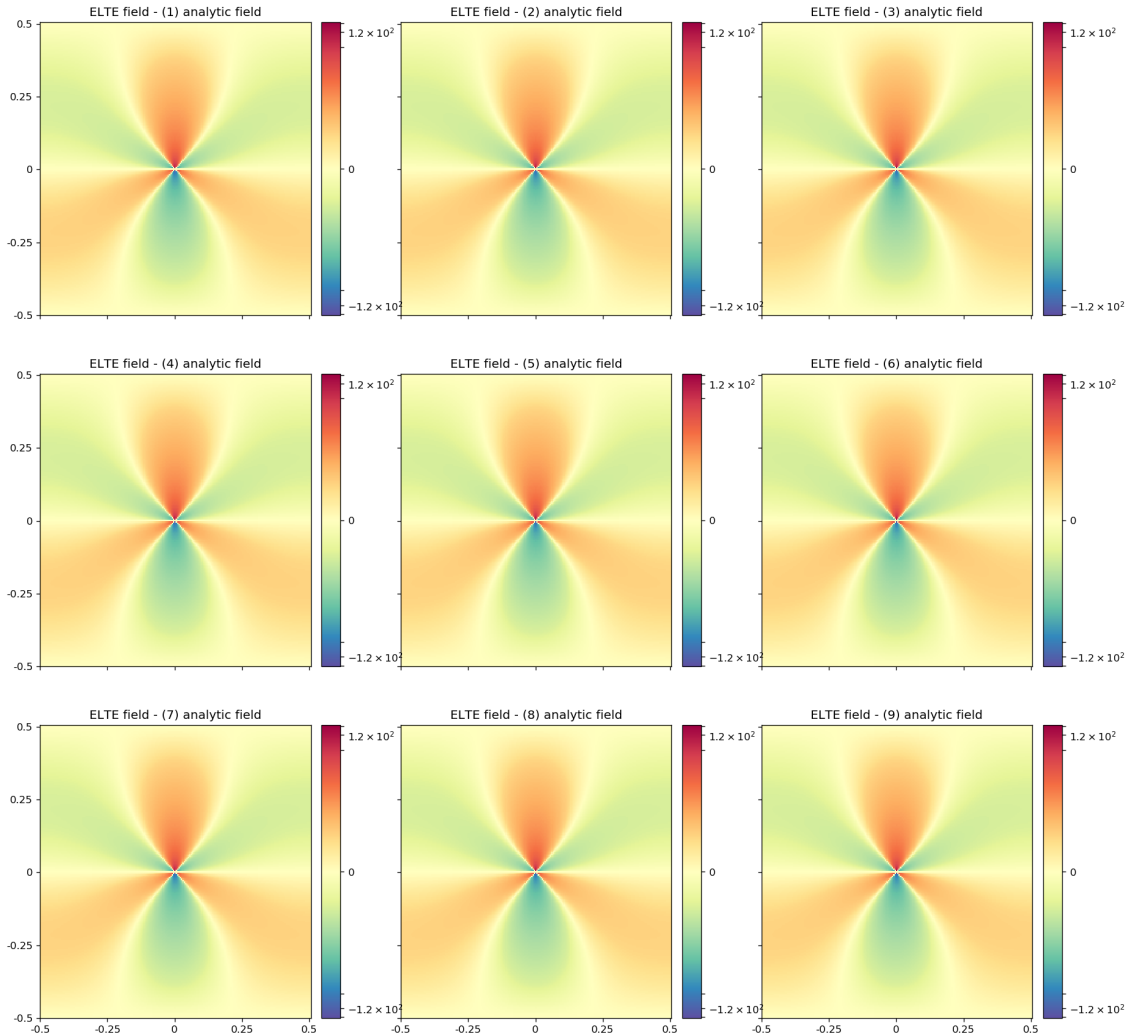

Conclusion

- considering $N = 4$ the analytic fields do not change significantly
- the difference with the ELTE stress field is most significant around the center