

PROPERTIES OF BLEND OPERATIONS

Mode name	Inverse	Transpose	Complement	Amount range	Relative exec time	Neutral Locus wrt FG	Neutral Locus wrt BG	Gradient Continuity	Local FG Inversion	Local BG Inversion	Saturated Fraction	Relative Contrast	Mean Difference	Darkened Fraction	Lightened Fraction	
Note 1	Note 1	Note 1	Note 1	Note 2	Note 3	Note 4	Note 4	Note 5	Note 6	Note 6	Note 7	Note 8	Note 9	Note 9	Note 9	
Opacity & Composition																
normal		normal	N/A	1.000	FG=BG	BG=FG	yes	none	none	0.01	1.00	0.00	0.50	0.50	0.50	
Bidirectional Modes																
General Contrast & Mixing																
soft light		soft light	N/A	2.125	FG=0.5	BG=0; BG=1	yes	none	none	0.01	1.06	0.00	0.50	0.50	0.50	
soft light ps			N/A	3.180	FG=0.5	BG=0; BG=1	no	none	none	0.01	1.02	0.00	0.50	0.50	0.50	
soft light svg			N/A	3.894	FG=0.5	BG=0; BG=1	no	none	none	0.01	1.02	0.00	0.50	0.50	0.50	
soft light eb			N/A	8.588	FG=0.5	BG=0; BG=1	yes	none	none	0.01	1.04	0.00	0.50	0.50	0.50	
soft light eb2			[0 to +inf]	14.902	FG=0.5	BG=0; BG=1	yes	none	none	0.01	1.03	0.00	0.50	0.50	0.50	
overlay		hard light	overlay	[0 to +inf]	2.129	FG=0.5	BG=0; BG=1	no	none	none	0.01	1.15	0.00	0.50	0.50	0.50
hard overlay			N/A	2.855	FG=0.5	BG=0	no	none	none	0.26	1.29	0.00	0.50	0.50	0.50	
hard light		overlay	hard light	[0 to +inf]	2.102	FG=0.5	none	no	none	0.01	1.15	0.00	0.50	0.50	0.50	
linear light		linear light	[0 1]	1.855	FG=0.5	none	no	none	0.50	1.41	0.00	0.50	0.50	0.50	0.50	
vivid light		vivid light	[0 to +inf]	4.980	FG=0.5	BG=0; BG=1	no	none	none	0.51	1.41	0.00	0.50	0.50	0.50	
easy light		easy light	[0 to +inf]	15.216	FG=0.5	BG=0; BG=1	no	none	none	0.02	1.13	0.00	0.50	0.50	0.50	
flat light		flat light	[0 to +inf]	3.373	FG=0.5	BG=0; BG=1	no	none	none	0.02	1.17	0.00	0.50	0.50	0.50	
soft flatlight		soft flatlight	[0 to +inf]	5.216	none	BG=0; BG=1	no	none	none	0.02	1.10	0.00	0.50	0.50	0.50	
softer flatlight		softer flatlight	[0 to +inf]	2.957	FG=BG	BG=FG; BG=0; BG=1	no	none	none	0.02	1.00	0.00	0.50	0.50	0.50	
meanlight		meanlight	[0 to +inf]	3.090	FG=0.5	BG=0; BG=1	no	none	none	0.01	1.00	0.00	0.50	0.50	0.50	
soft mean light		soft mean light	[0 to +inf]	3.031	FG=BG	BG=FG; BG=0; BG=1	no	none	none	0.01	0.83	0.00	0.50	0.50	0.50	
star light		star light	[0 2]	4.000	FG=BG	BG=FG	yes	none	none	0.01	0.82	0.00	0.50	0.50	0.50	
moon light		moon light	[0 2]	5.922	FG=BG	BG=FG	yes	none	none	0.00	0.91	0.00	0.50	0.50	0.50	
moon light 2		moon light 2	[0 2]	5.686	FG=BG	BG=FG	yes	none	none	0.00	0.76	0.00	0.50	0.50	0.50	
pin light		pin light	[0 2]	2.478	FG=0.5, FG=BG	BG=FG	no	none	none	0.01	1.00	0.00	0.25	0.25	0.25	
super light		super light	[1 to +inf]	1.953	FG=0.5	none	no	none	0.50	1.41	0.00	0.50	0.50	0.50	0.50	
fog lighten		fog darken	N/A	2.267	FG=BG, FG=0	BG=FG	yes	1	none	0.00	0.81	0.08	0.50	0.50	0.50	
fog darken		fog lighten	N/A	2.329	FG=BG, FG=1	BG=FG	yes	1	none	0.00	0.81	-0.08	0.50	0.50	0.50	
Hard Mix																
hard mix ps		hard mix ps	[0 2]	2.094	none	BG=0; BG=1	no	none	none	1.00	1.73	0.00	0.49	0.50	0.50	
hard mix ib		hard mix ib	[0 2]	2.278	none	BG=0; BG=1	no	[1 2]	none	1.00	1.73	0.00	0.50	0.49	0.49	
hard mix kr		hard mix kr	[0 2]	2.349	none	BG=0; BG=1	no	[0 2]	none	0.76	1.60	0.00	0.49	0.50	0.50	
Quadratics																
glow		reflect	heat	(-inf to +inf)	2.349	FG=1-BG	BG=0; BG=1; BG=1-FG	no	[-1 0]	(-inf -1]	0.34	1.37	0.05	0.50	0.49	0.49
heat		freeze	glow	(-inf to +inf)	2.557	FG=1-BG	BG=0; BG=1; BG=1-FG	no	[-1 0]	(-inf -1]	0.34	1.37	-0.05	0.50	0.50	0.50
reflect		glow	freeze	(-inf to +inf)	2.537	none	none	no	none	(-inf -1]	0.34	1.37	0.05	0.39	0.60	0.60
freeze		heat	reflect	(-inf to +inf)	2.494	none	none	no	none	(-inf -1]	0.34	1.37	-0.05	0.60	0.39	0.39
helow		frect	helow	(-inf to +inf)	3.196	FG=1-BG	BG=0; BG=1; BG=1-FG	yes	[-1 0]	(-inf -1]	0.01	1.24	0.00	0.49	0.50	0.50
gleat		reeze	gleat	(-inf to +inf)	3.020	FG=1-BG	BG=0; BG=1; BG=1-FG	no	[-1 0]	(-inf -1]	0.67	1.52	0.00	0.50	0.50	0.50
frect		helow	frect	(-inf to +inf)	2.929	none	none	yes	none	(-inf -1]	0.01	1.24	0.00	0.50	0.50	0.50
reeze		gleat	reeze	(-inf to +inf)	2.949	none	none	no	none	(-inf -1]	0.67	1.52	0.00	0.50	0.50	0.50
Penumbra (Soft Dodge/Burn)																
penumbra a1		penumbra b1	penumbra b1	[0 to +inf]	2.247	none	BG=0	yes	none	none	0.01	1.00	0.00	0.58	0.41	0.41
penumbra b1		penumbra a1	penumbra a1	[0 to +inf]	2.349	none	BG=1	yes	none	none	0.01	1.00	0.00	0.41	0.58	0.58
penumbra a2		penumbra b2	penumbra b2	[0 to +inf]	3.898	none	BG=0	yes	none	none	0.01	0.92	0.00	0.56	0.44	0.44
penumbra b2		penumbra a2	penumbra a2	[0 to +inf]	3.961	none	BG=1	yes	none	none	0.01	0.92	0.00	0.44	0.56	0.56
penumbra a3		penumbra b3	penumbra b3	[0 to +inf]	2.878	FG=BG	BG=FG; BG=0	yes	none	none	0.01	0.83	0.00	0.50	0.49	0.49
penumbra b3		penumbra a3	penumbra a3	[0 to +inf]	3.000	FG=BG	BG=FG; BG=1	yes	none	none	0.01	0.83	0.00	0.49	0.50	0.50
Mean-Scaled																
scale add				(-inf to +inf)*	35.294	content-dependent	none	no	(-inf 0)	none	0.25	1.17	0.00	0.50	0.50	0.50
scale mult				[0 to +inf)*	31.255	content-dependent	BG=0	no	none	none	0.16	1.20	-0.05	0.50	0.50	0.50
contrast				[0 to +inf)*	32.824	content-dependent	BG=0; BG=1	no	none	none	0.26	1.				

Plots for selected blend modes

This PDF file also has an index for easier navigation.

Overview Maps

Intensity map overview
R-BG Contrast map overview
R vs BG (meridian) map overview
R vs FG map overview
Loci of Neutral response (conditions in which BG remains unchanged)


Soft Light Properties


Softlight comparisons
Soft Light EB2 (meridian maps)


Parameter Sweeps


Soft Light EB2	Color Burn	Moon Glow 2
Overlay	Poly Dodge	Moon Shadow 2
Linear Light	Poly Burn	Penumbra A1
Vivid Light	Linear Dodge	Penumbra B1
Easy Light	Linear Burn	Glow
Flat Light	Easy Dodge	Heat
Mean Light	Easy Burn	Gleat
Star Light	Suau Dodge	Helow
Moon Light	Suau Burn	Difference
Moon Light 2	Maleki Dodge	Extremity
Super Light	Maleki Burn	Sqrtdiff
Pin Light	Flat Glow	Interpolate
Hard Mix PS	Flat Shadow	Average
Hard Mix IB	Mean Glow	Geometric
Hard Mix KR	Mean Shadow	Harmonic
Scale Add	Star Glow	Pnorm
Scale Mult	Star Shadow	Lighten RGB
Contrast	Moon Glow	Curves
Color Dodge	Moon Shadow	

Composition Mode Examples




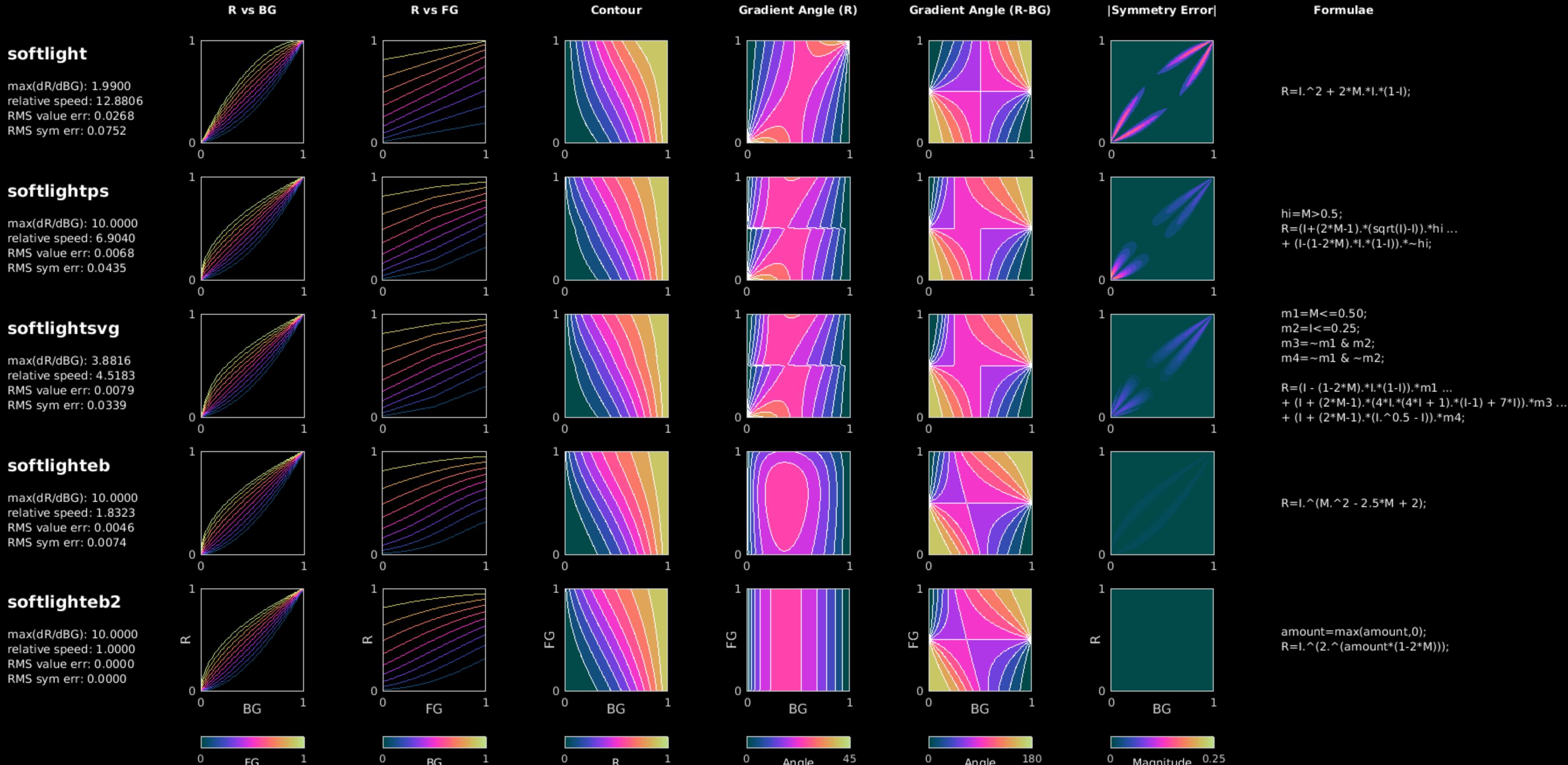


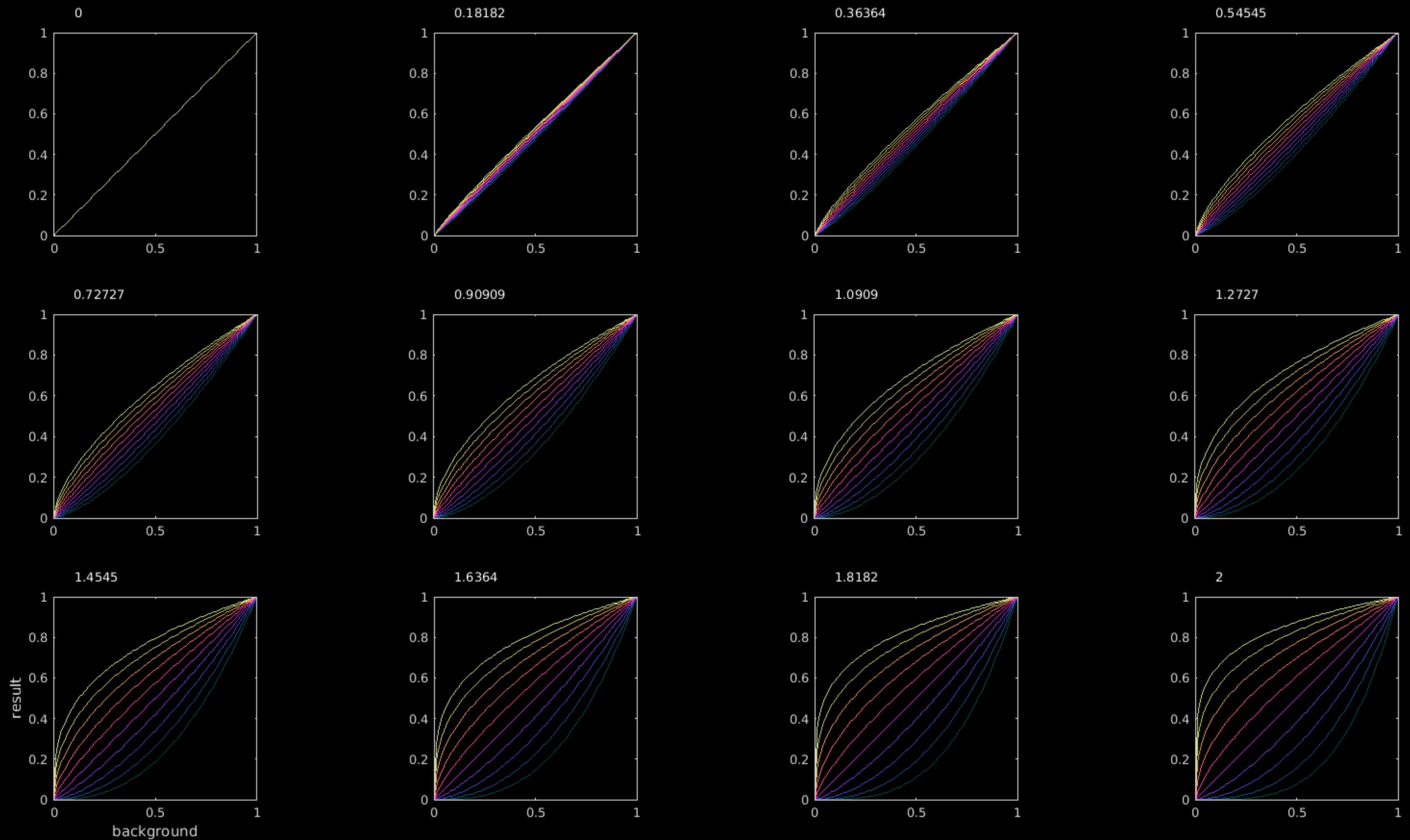




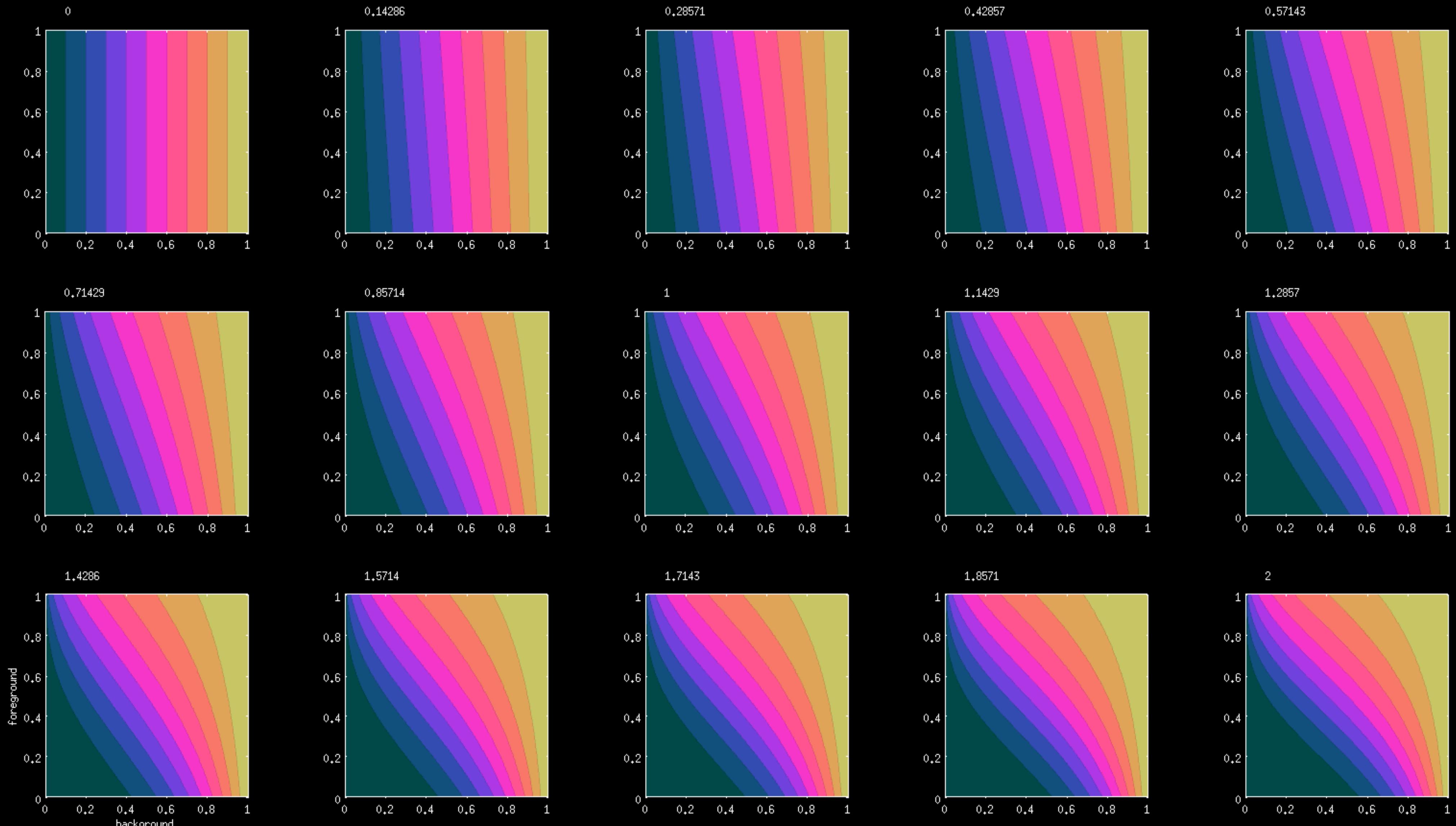
LOCI OF NEUTRAL RESPONSE (see contrast plots)

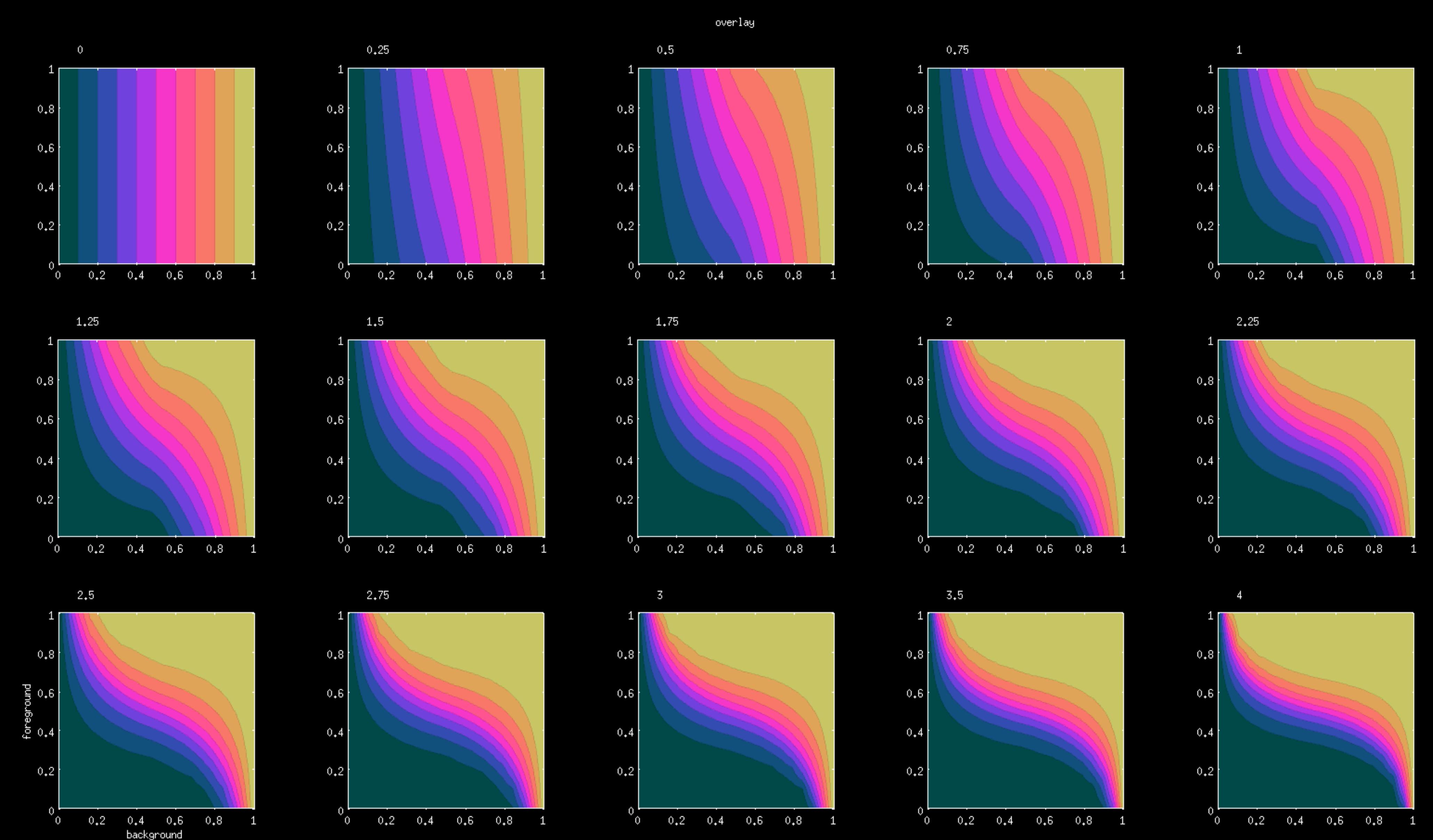




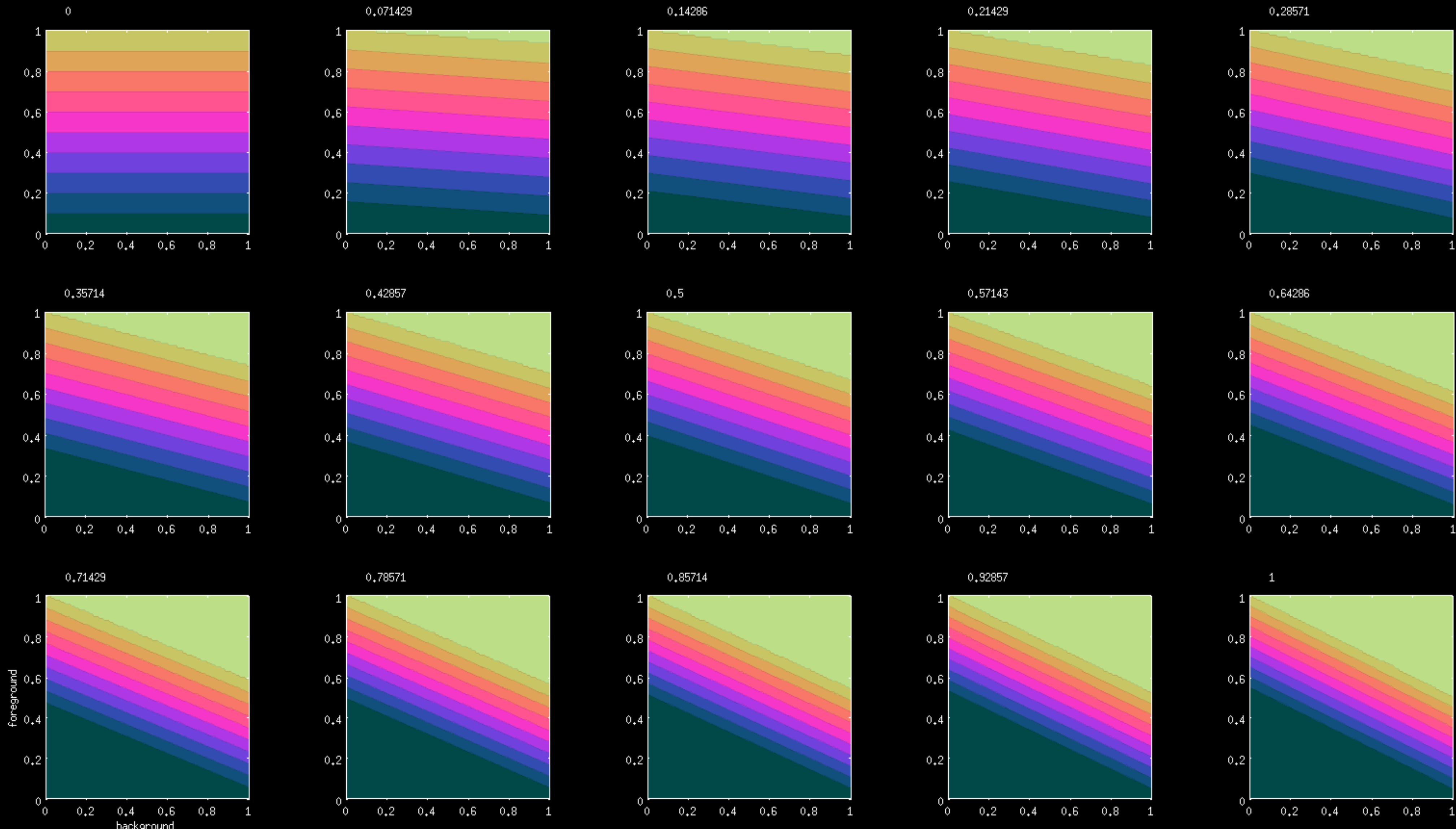
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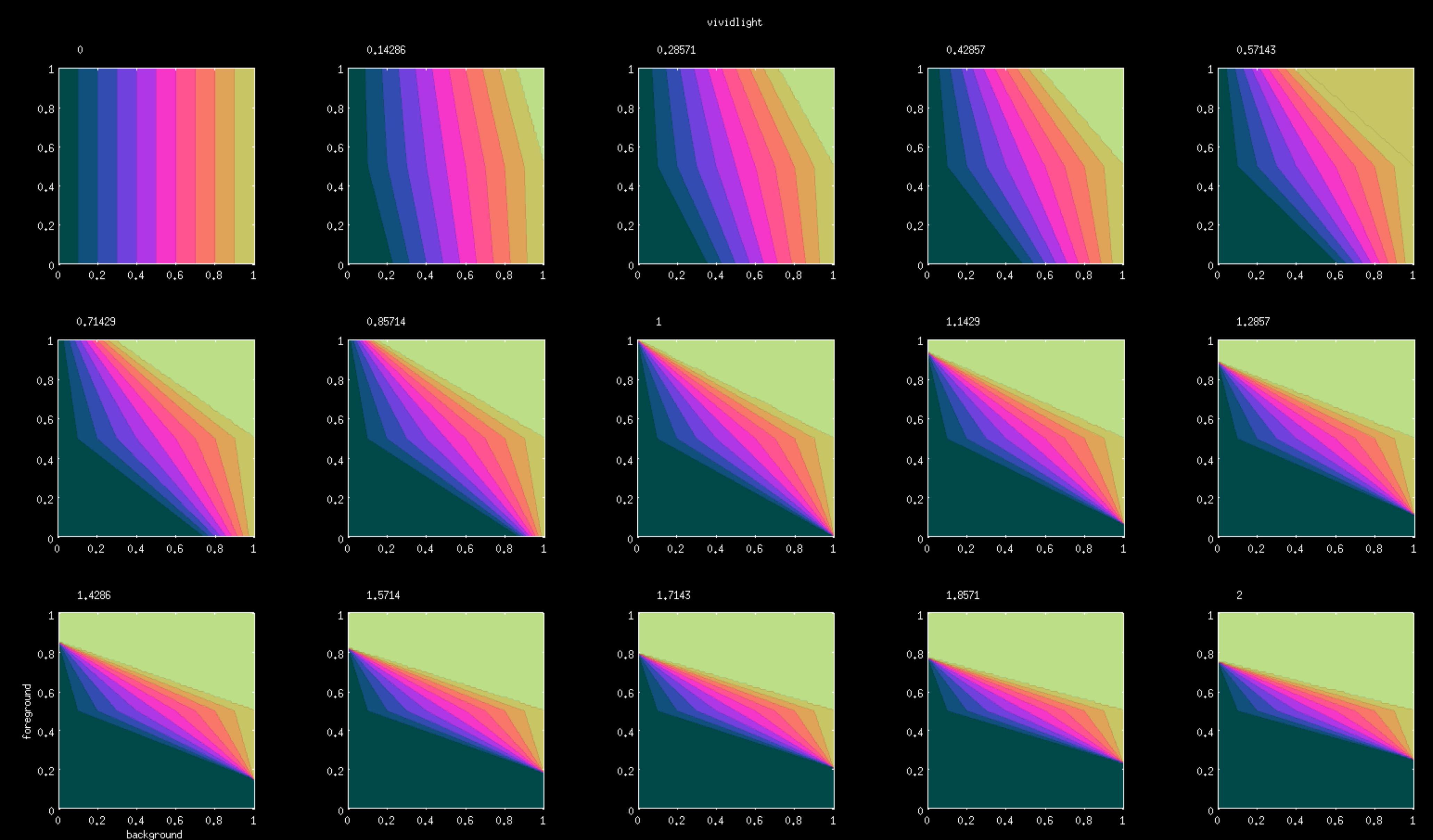
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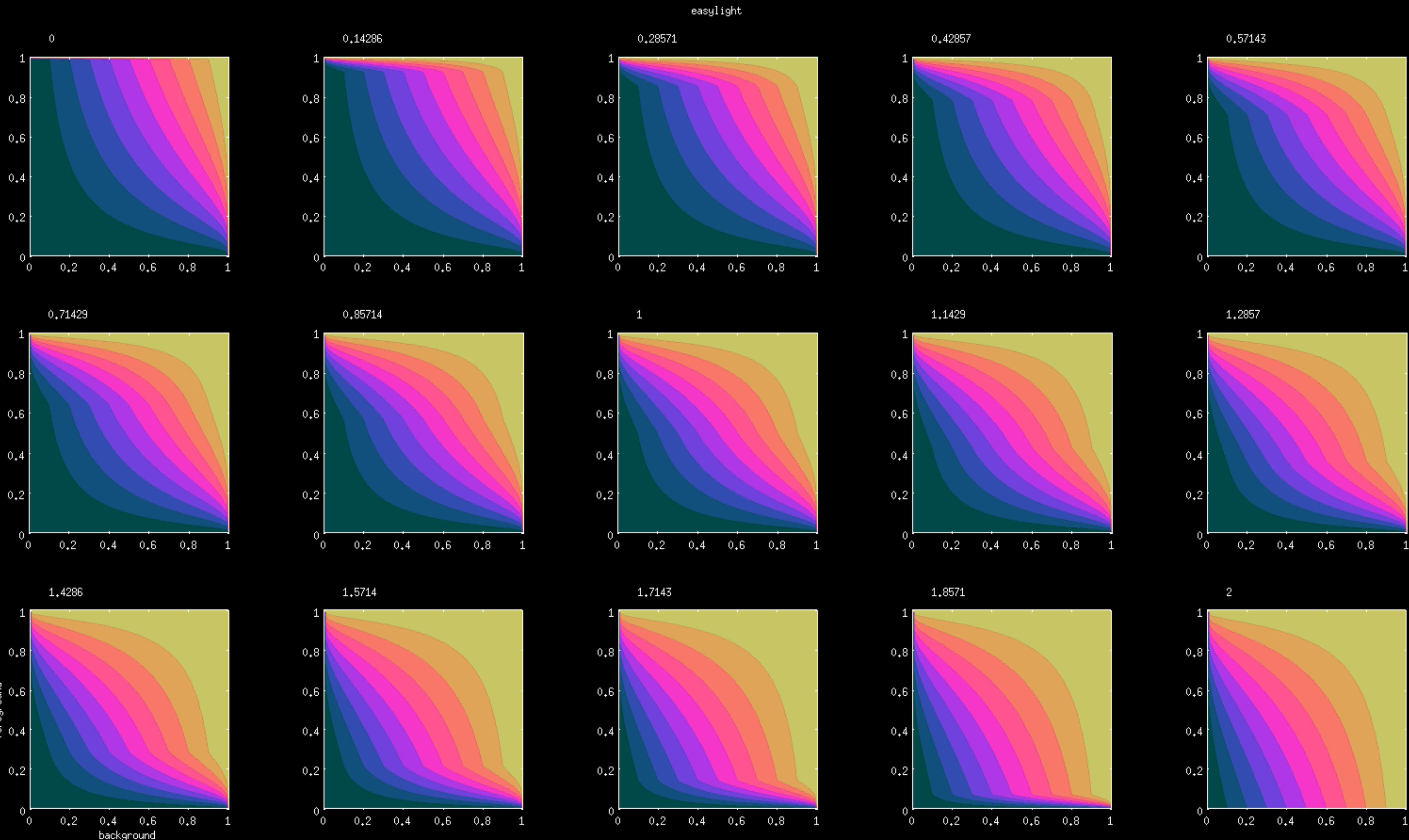


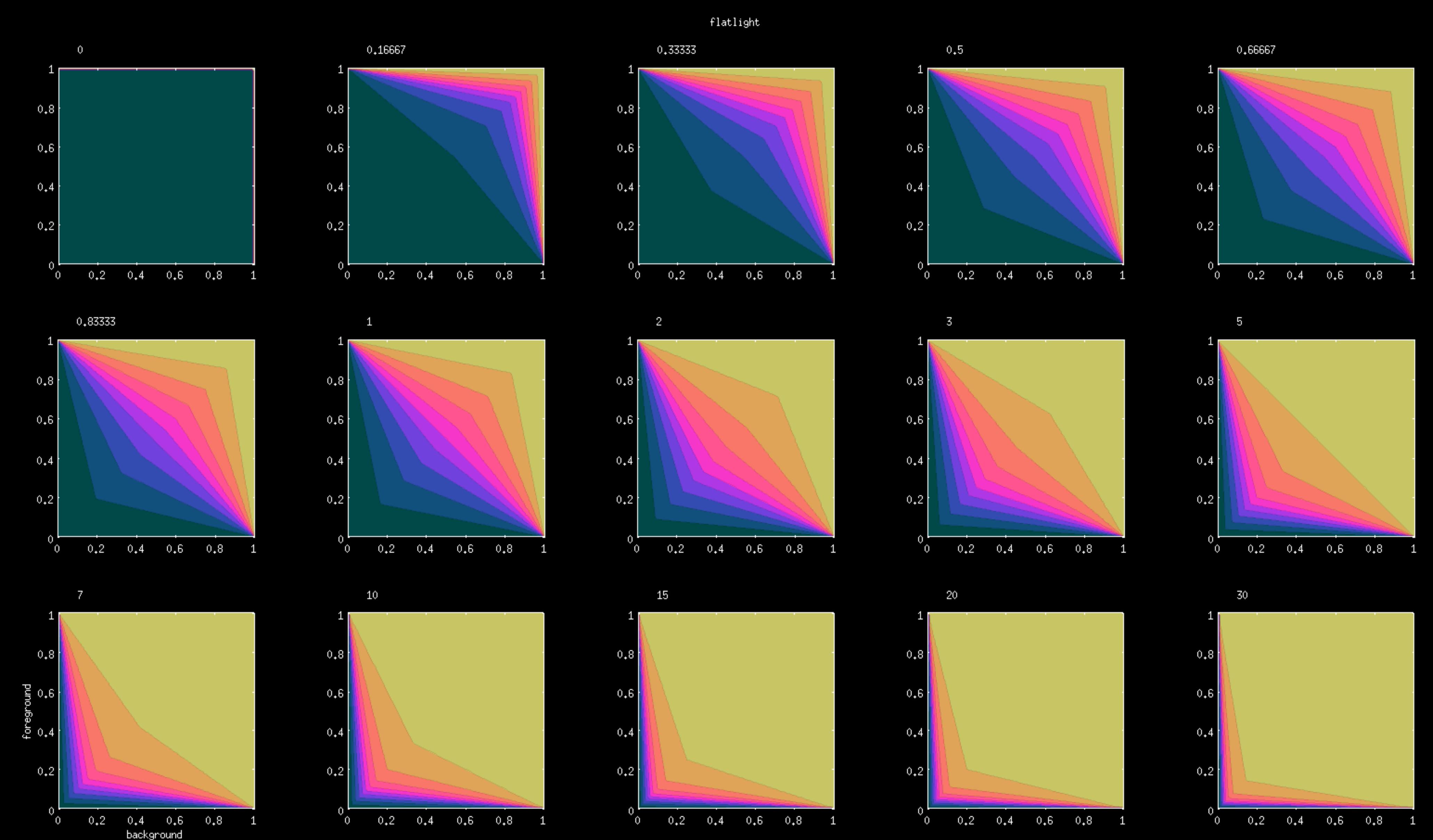


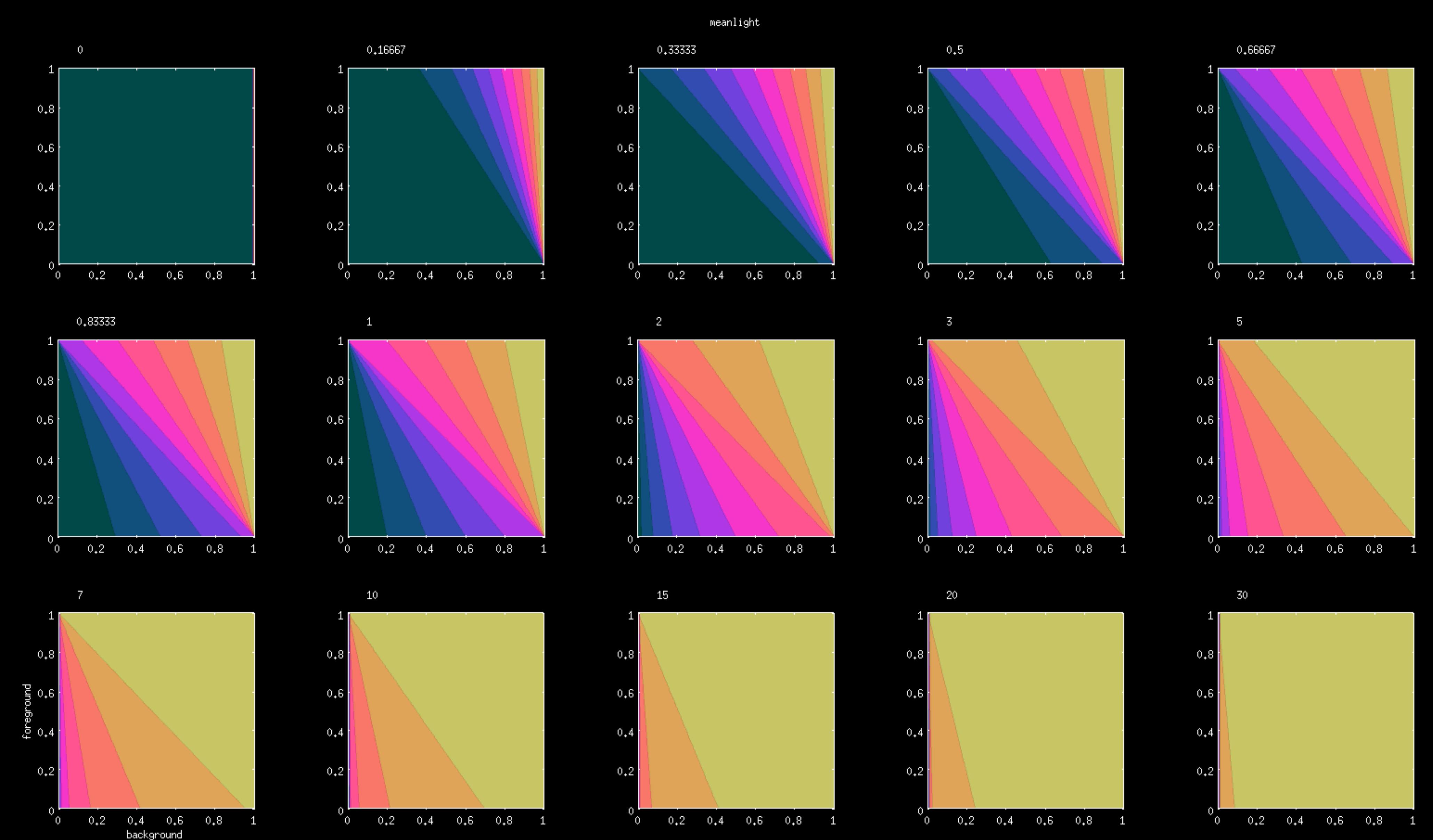
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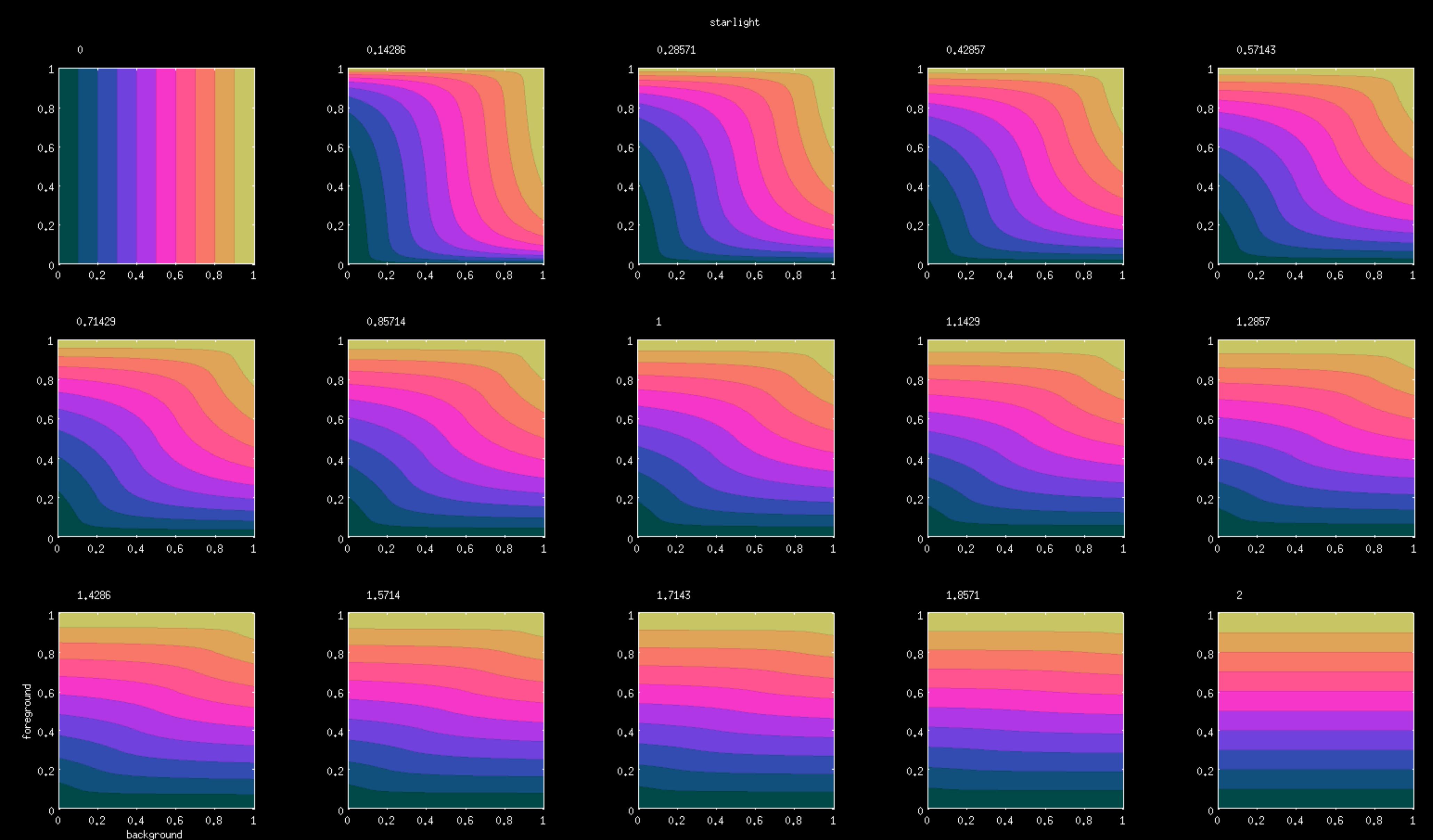


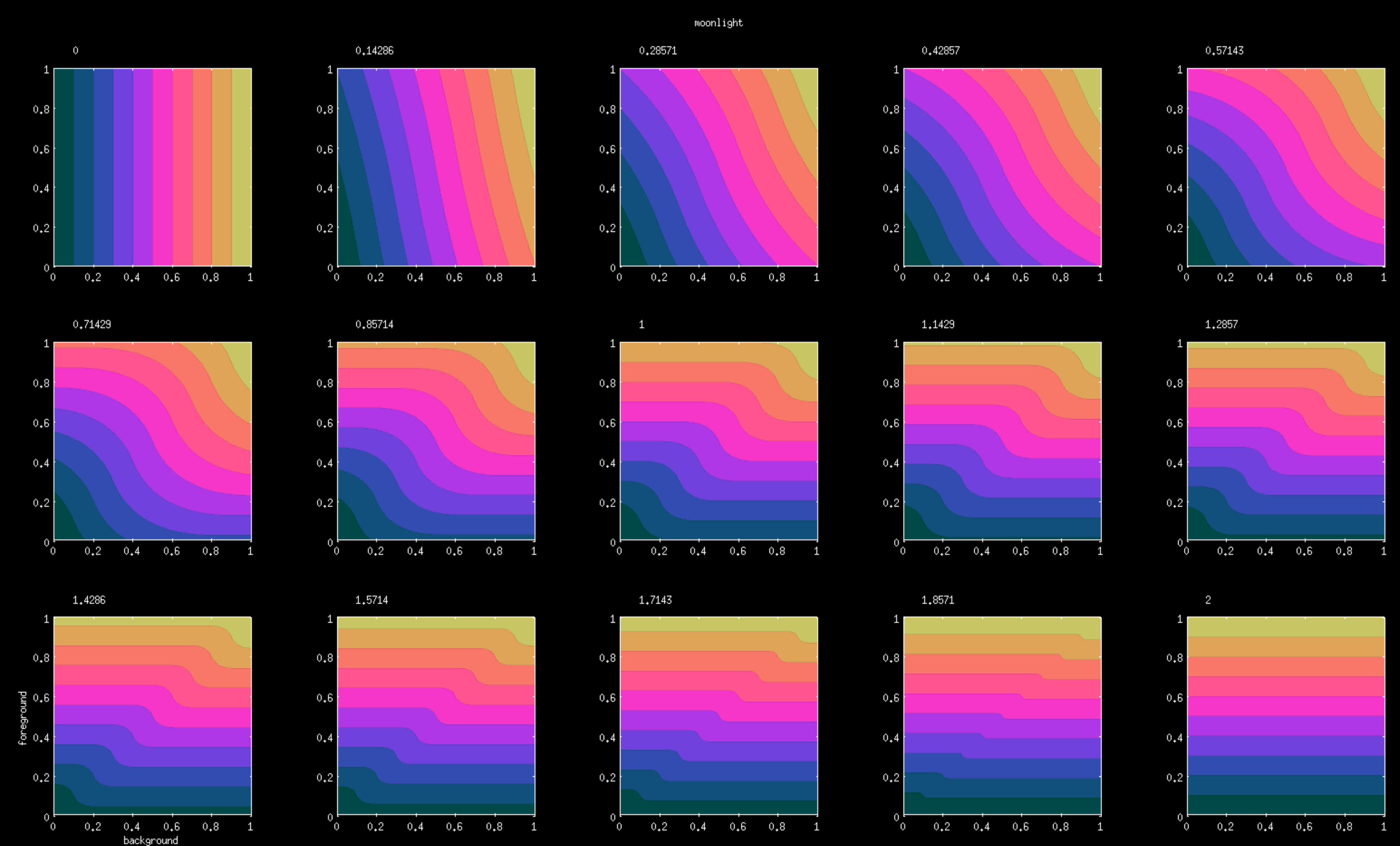


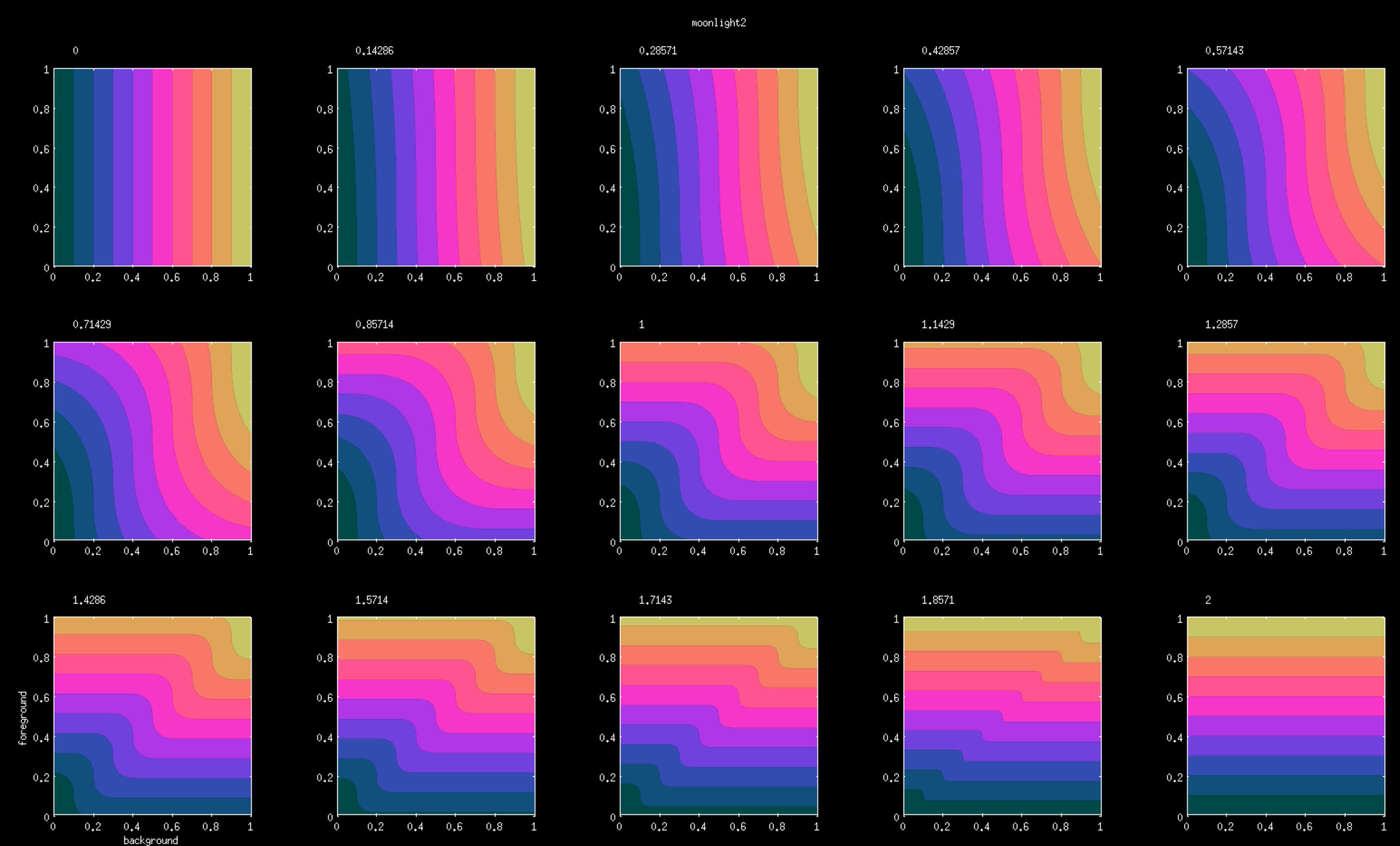


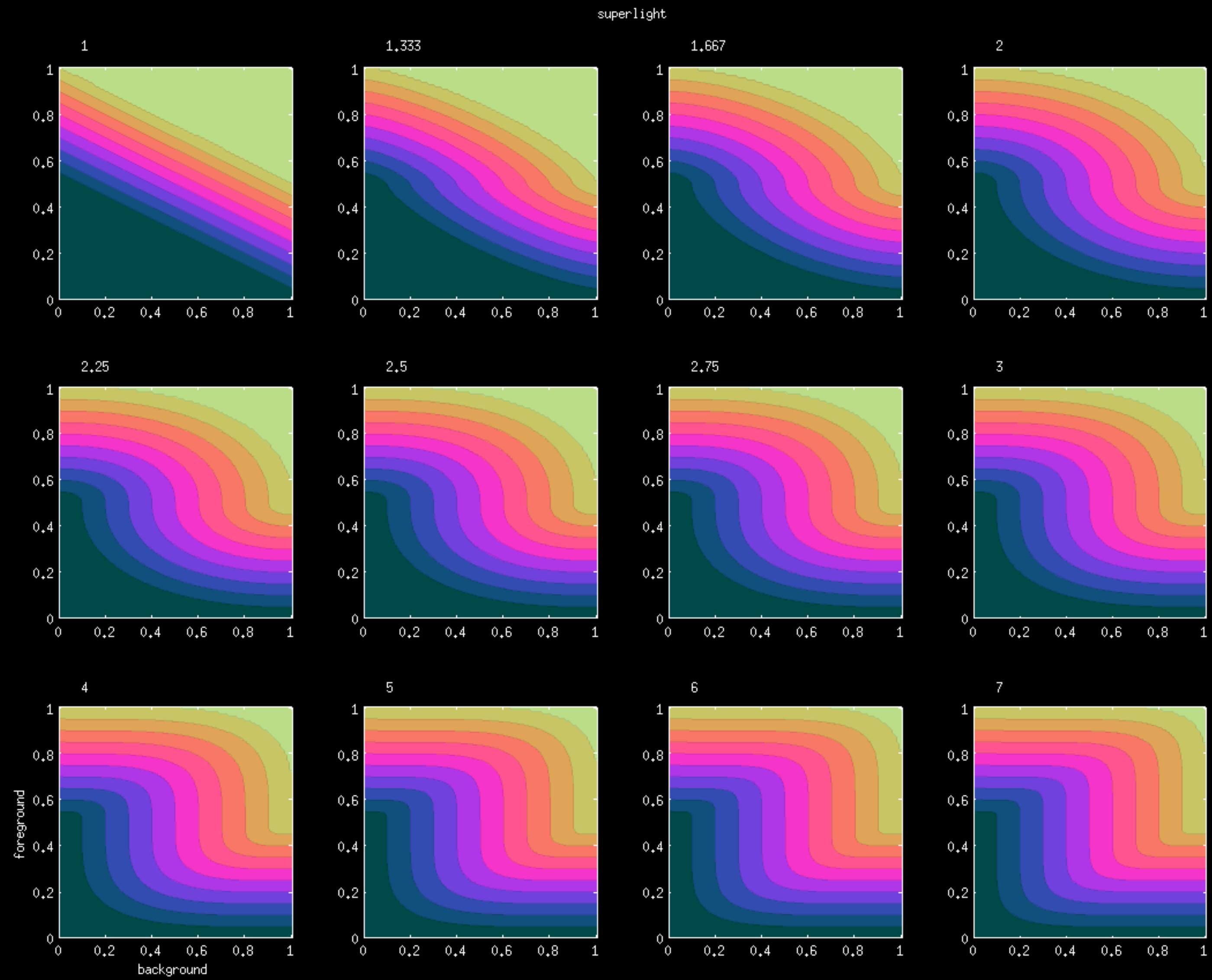




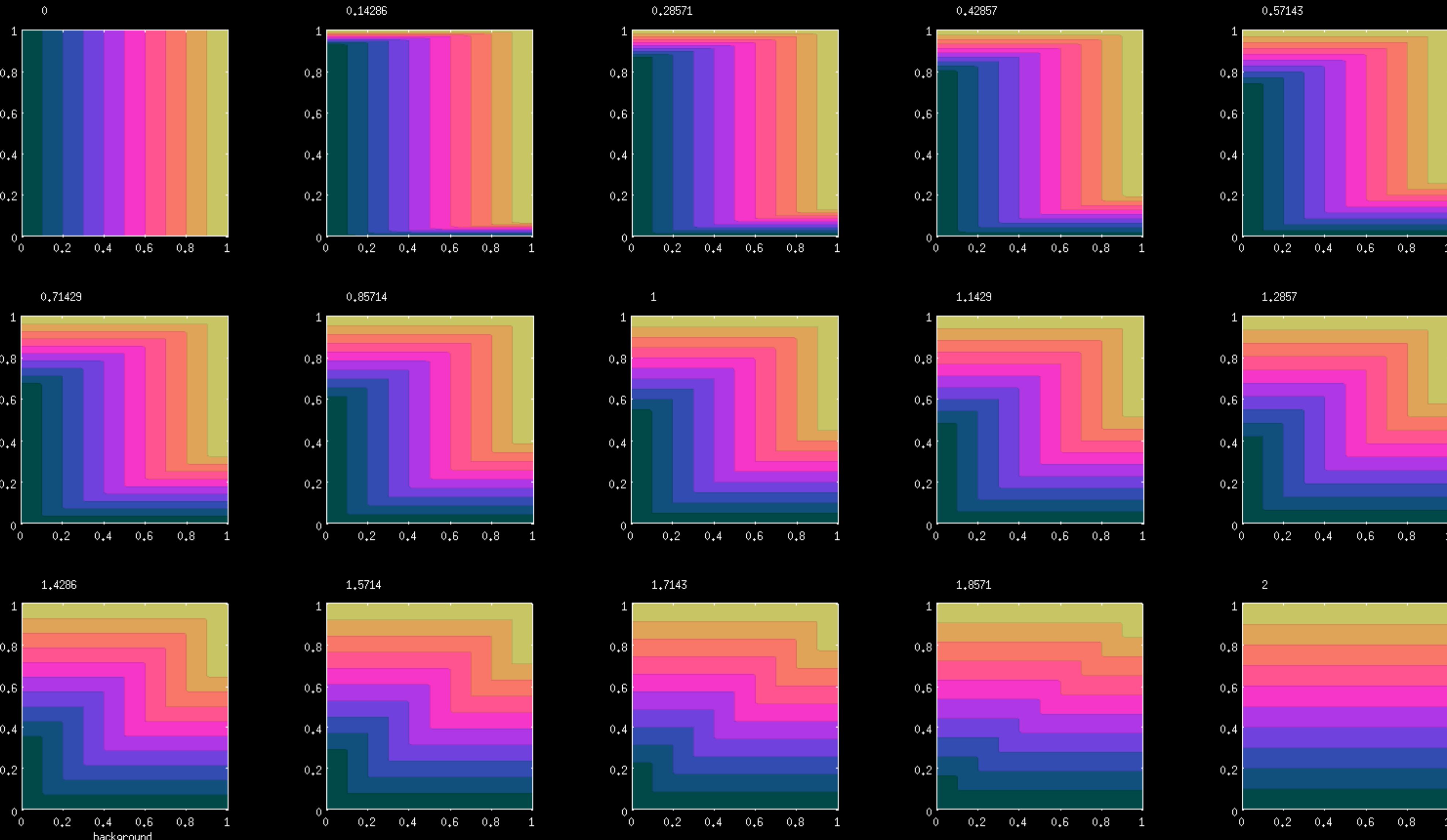




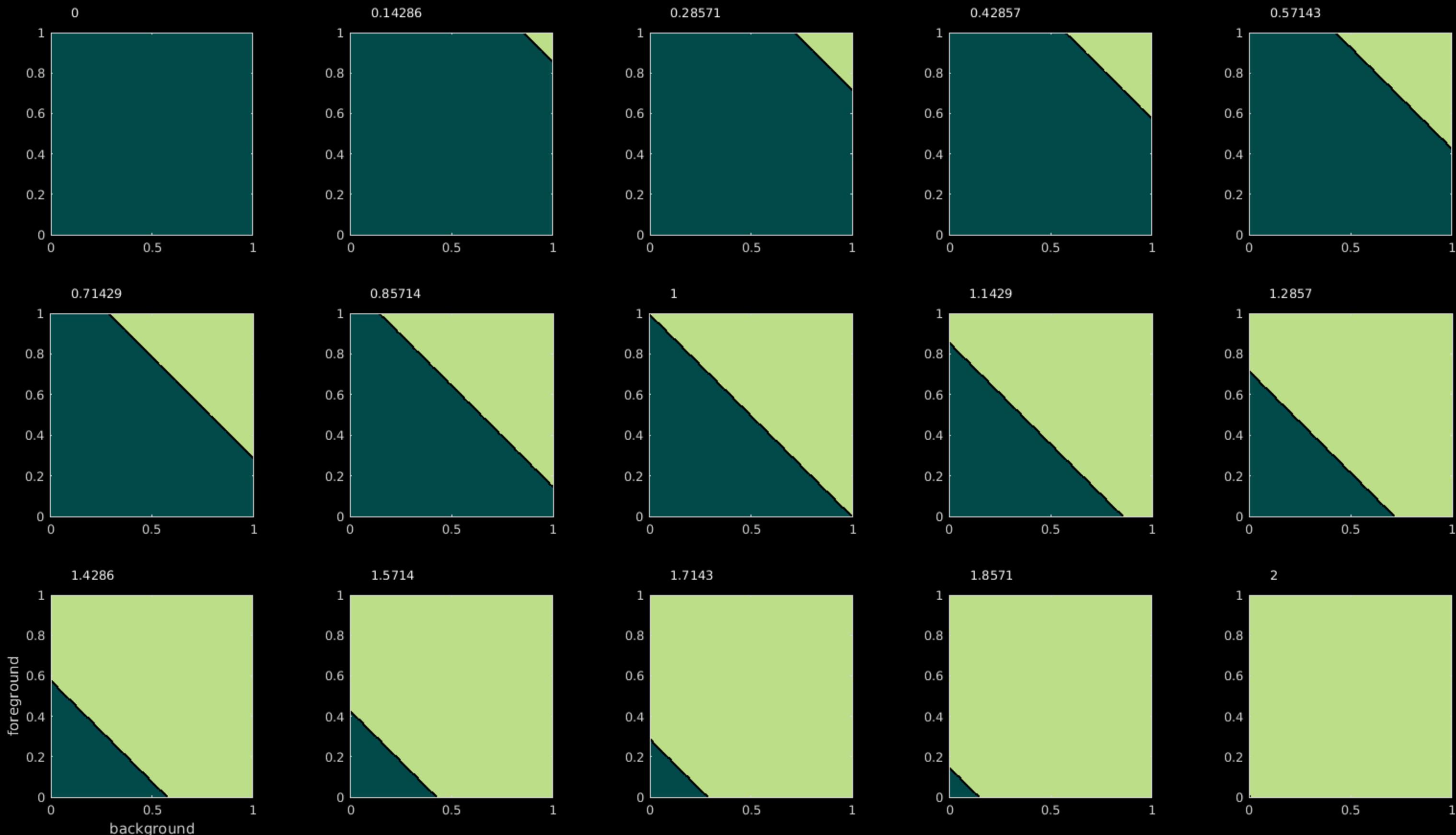




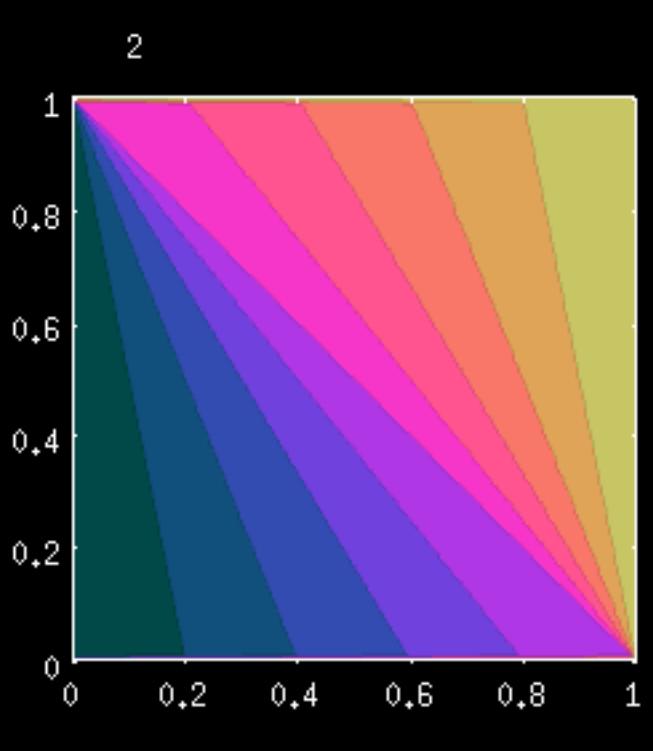
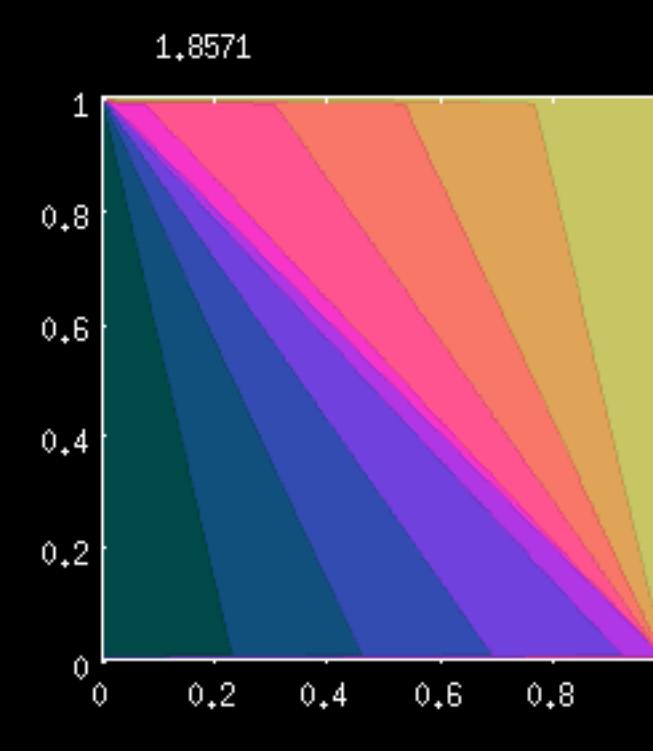
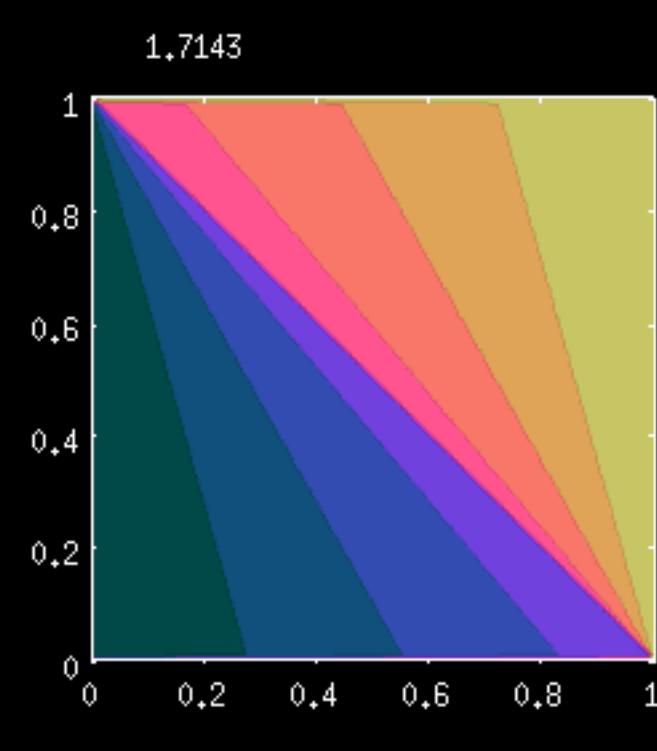
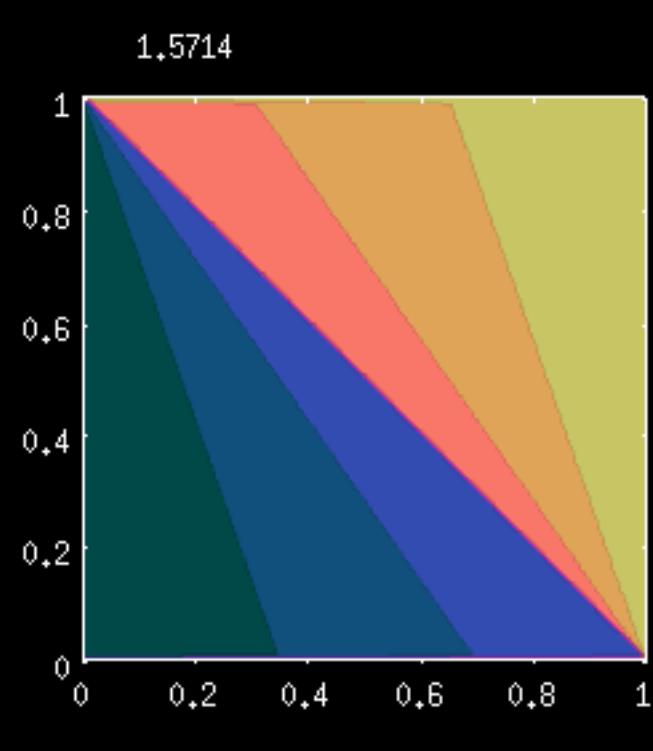
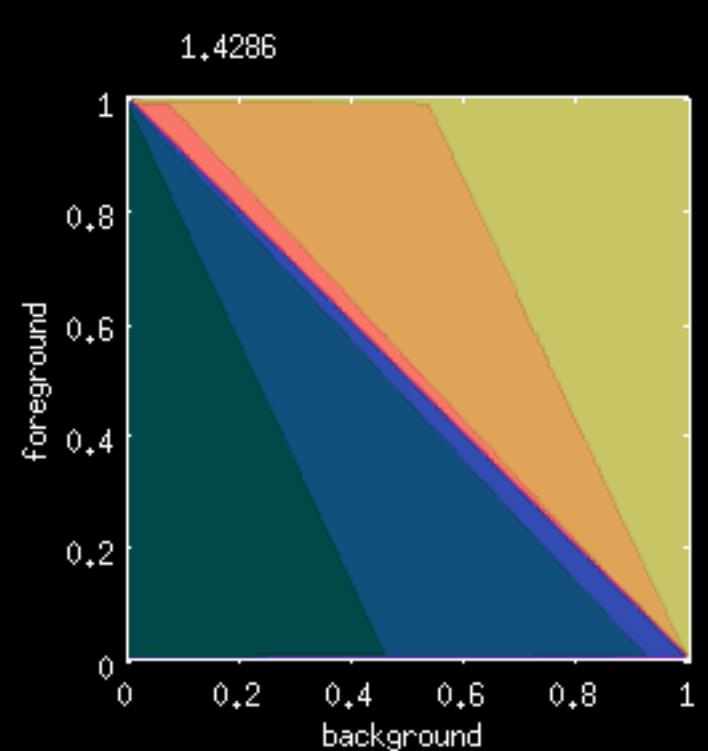
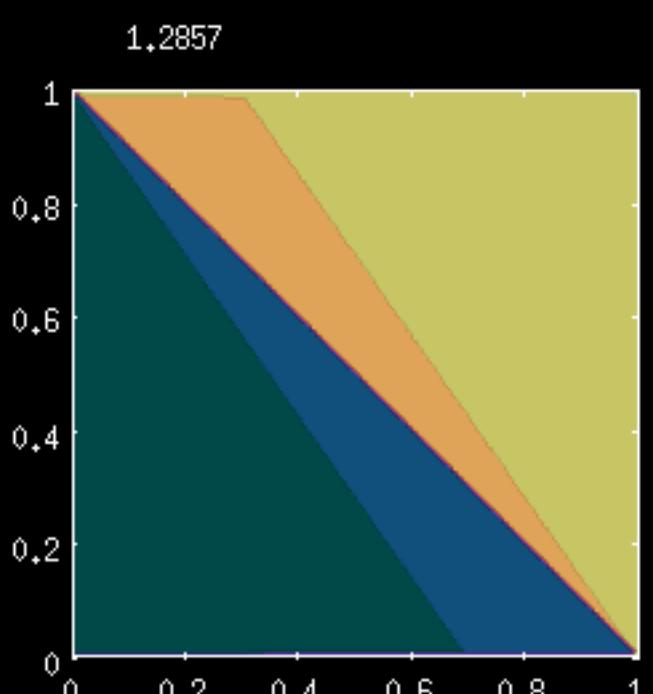
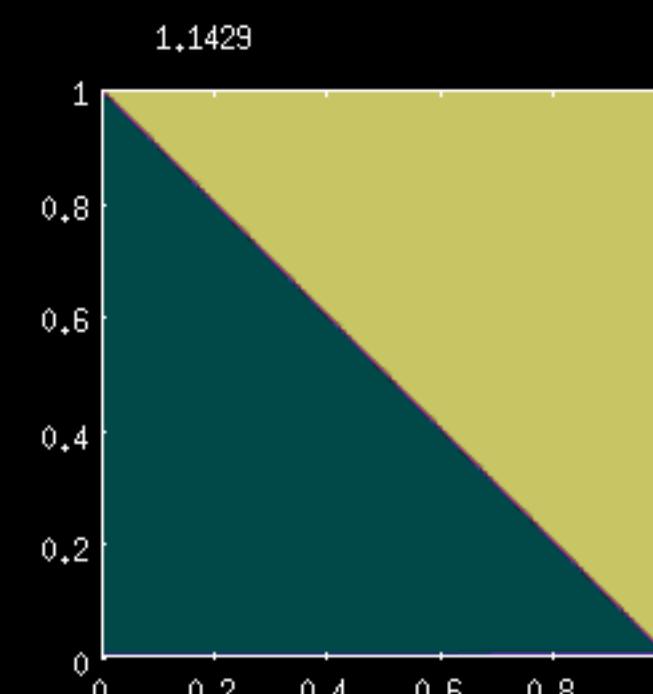
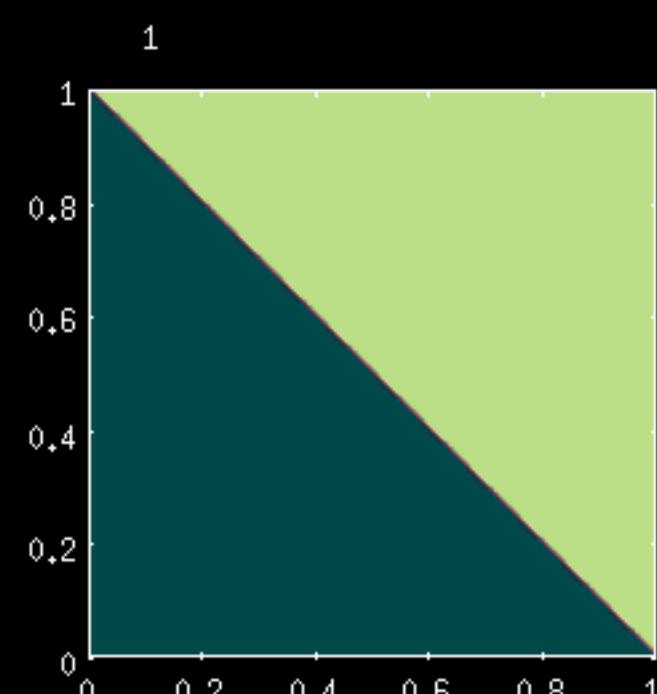
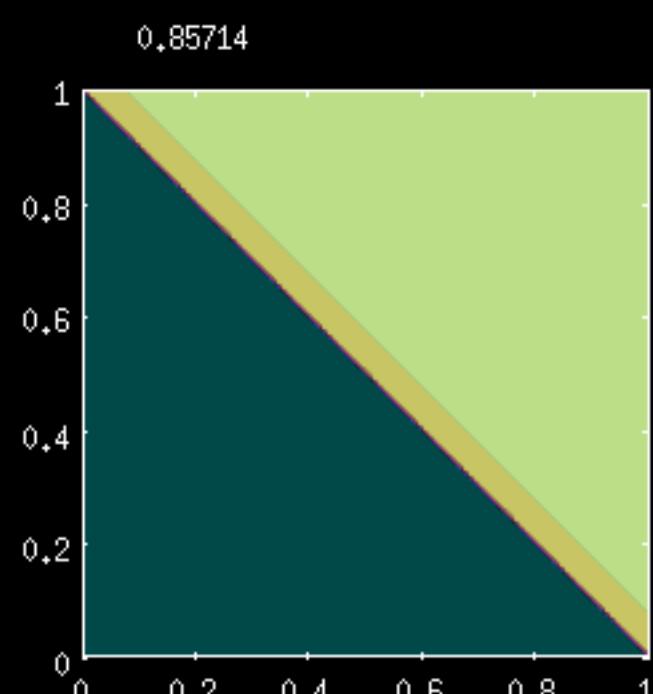
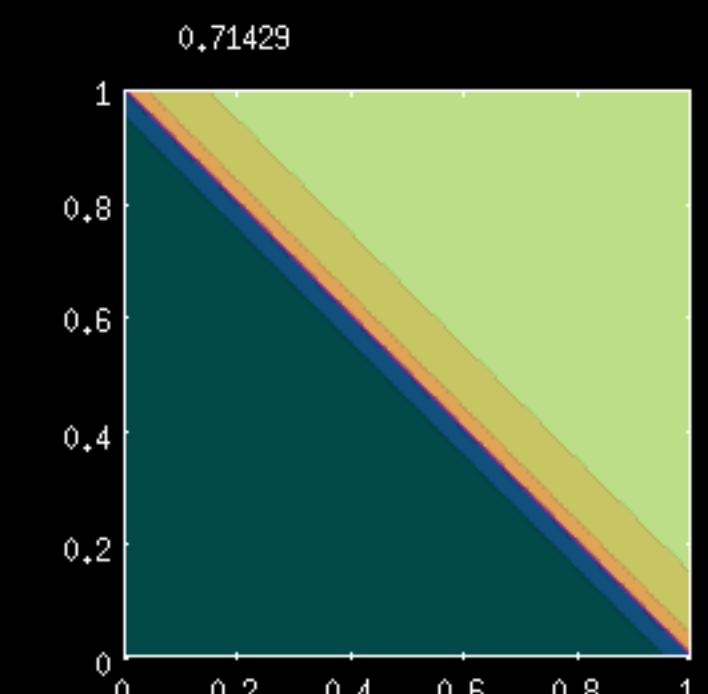
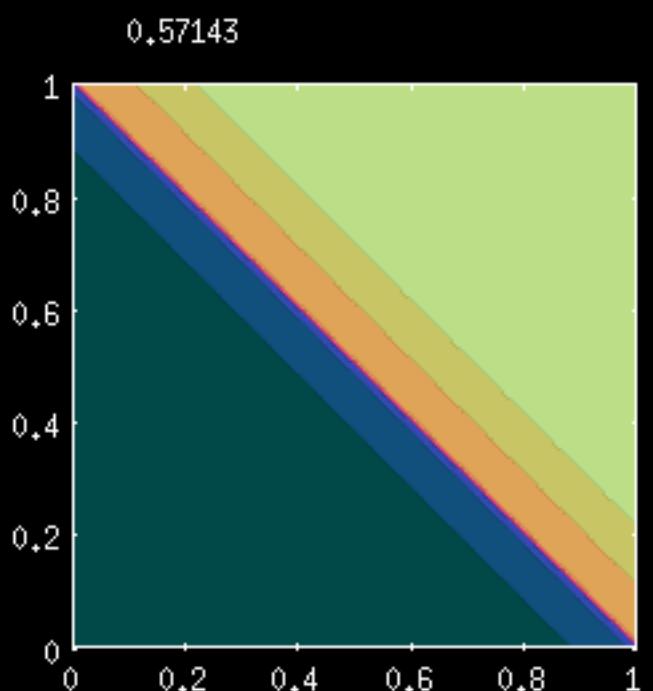
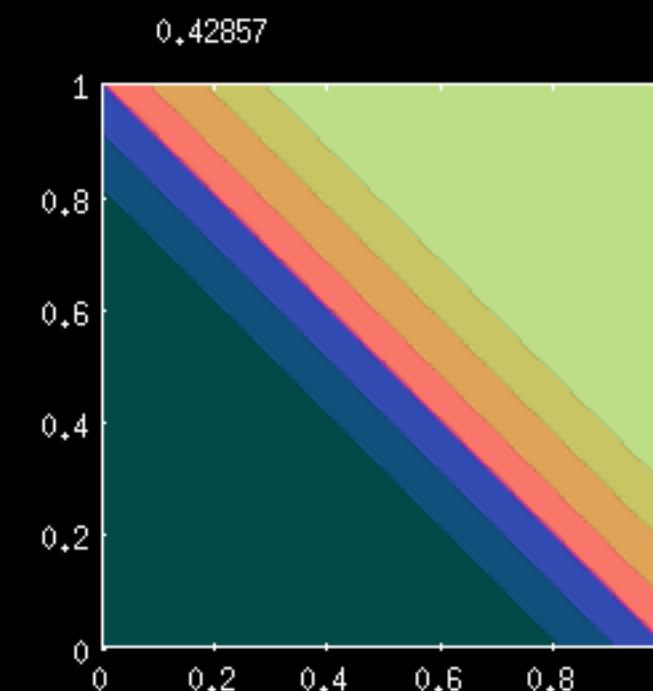
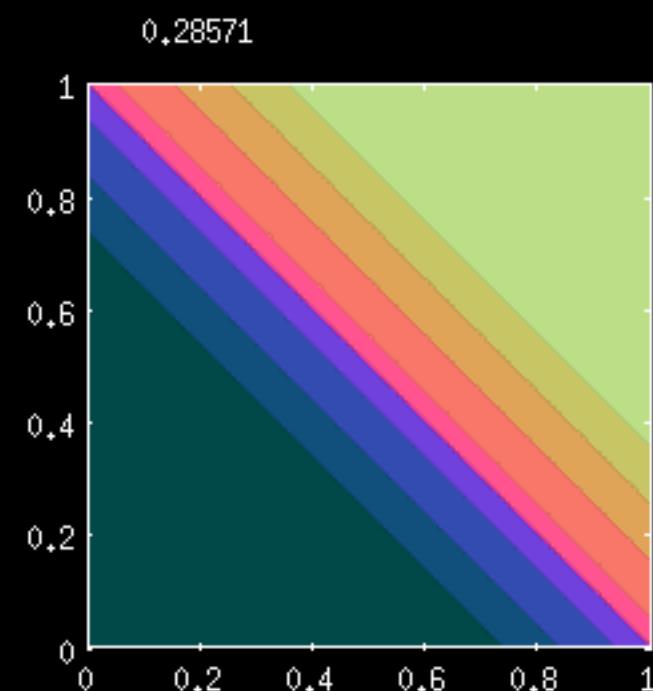
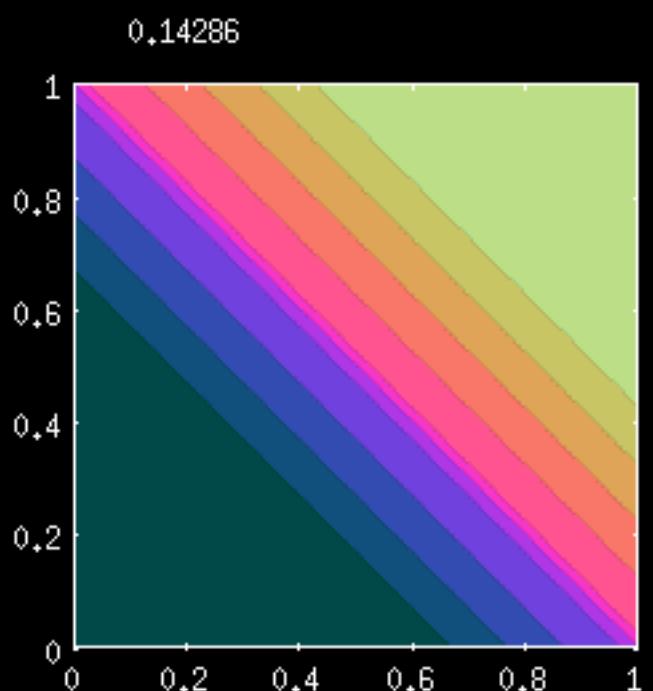
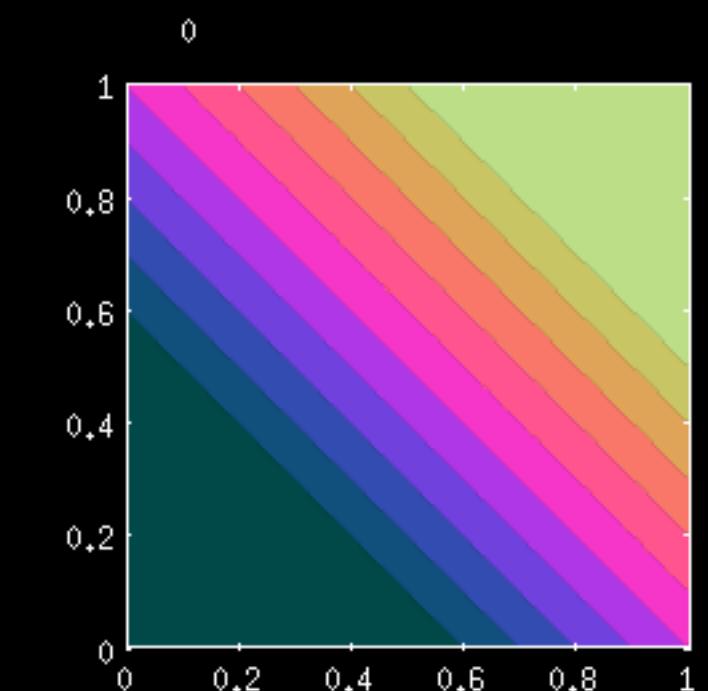
pinlight



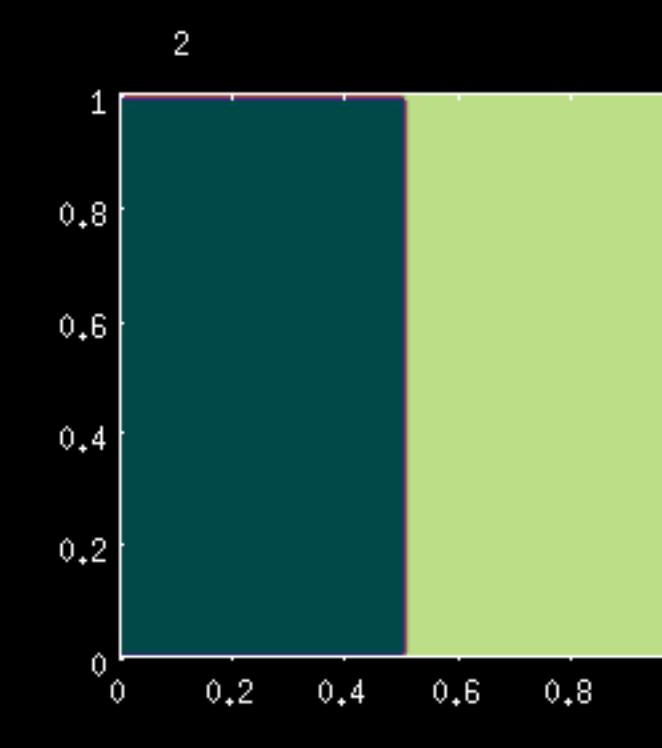
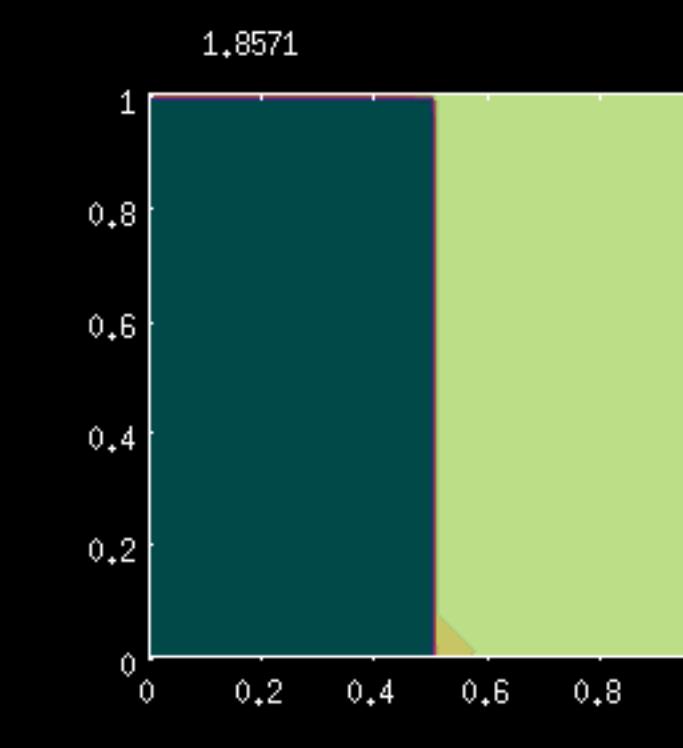
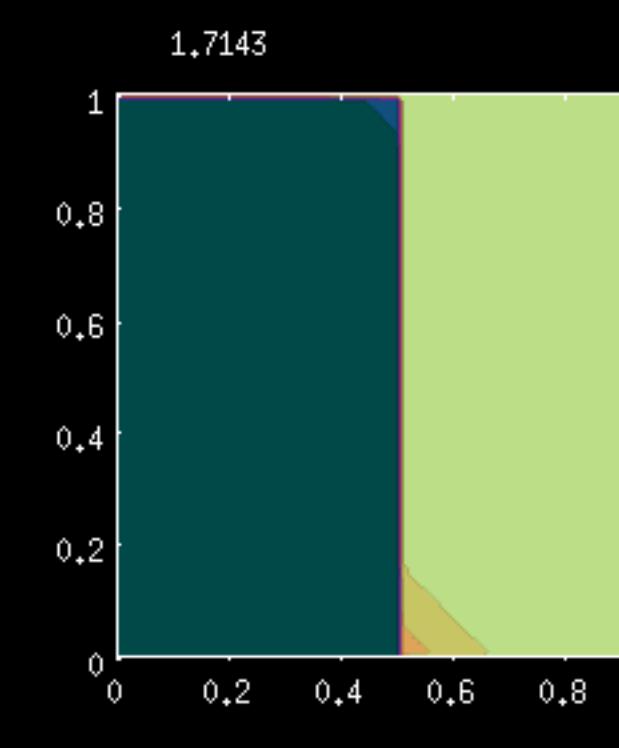
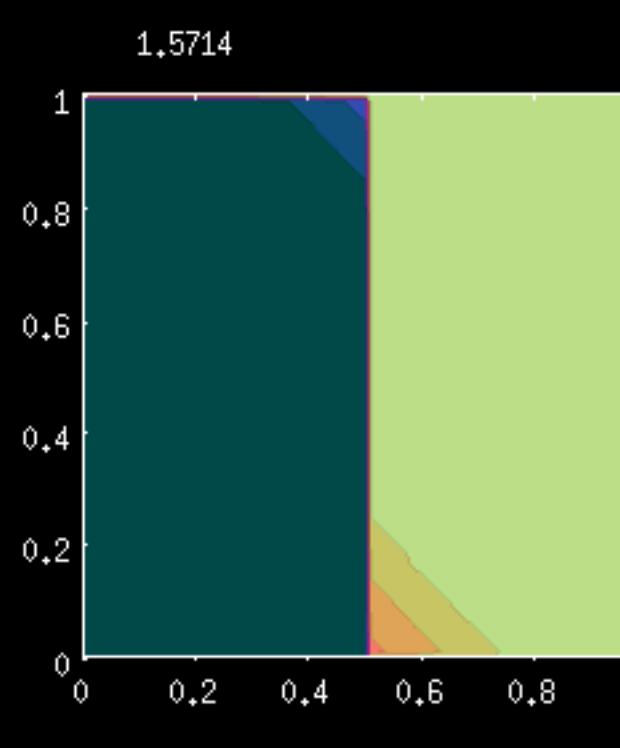
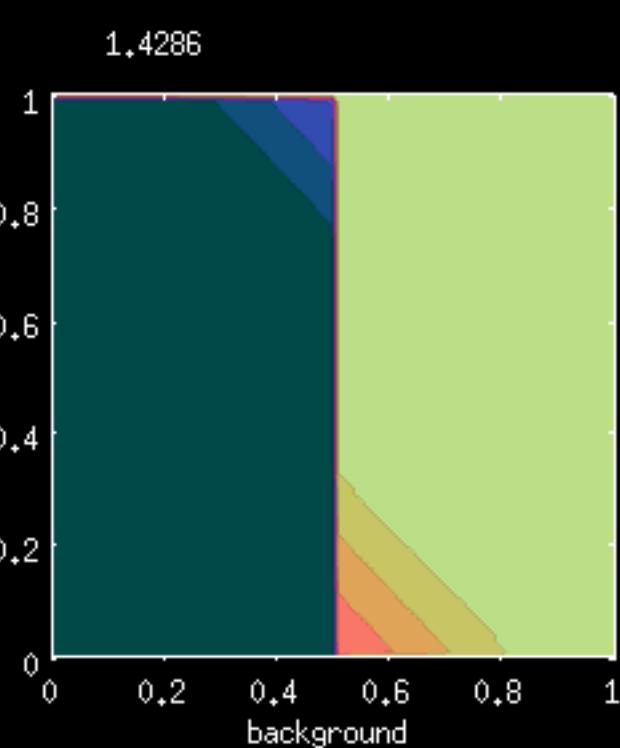
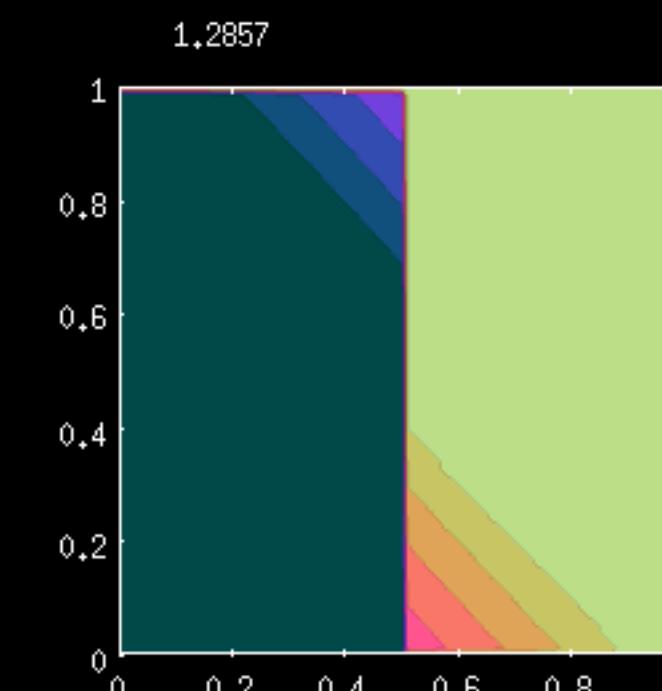
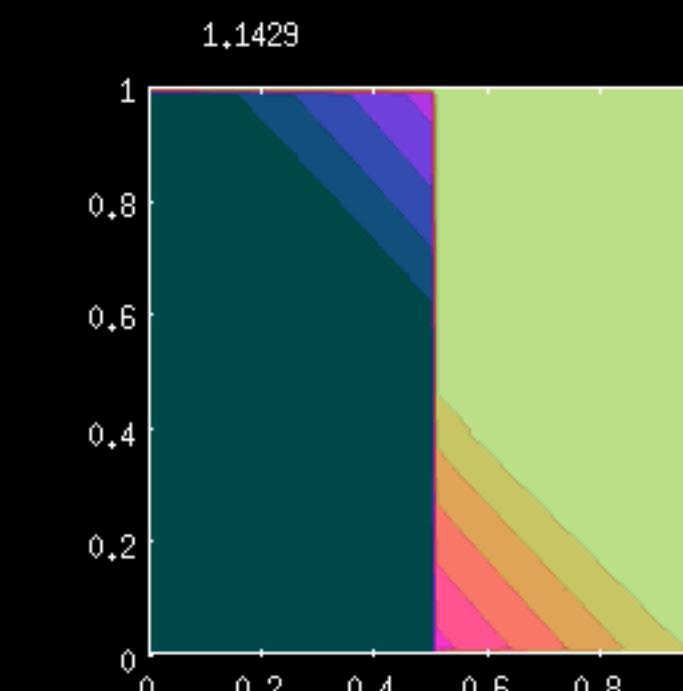
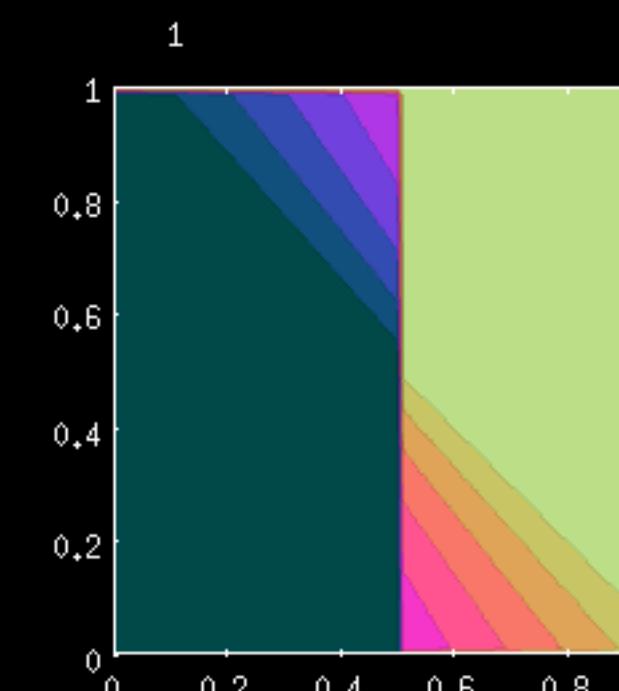
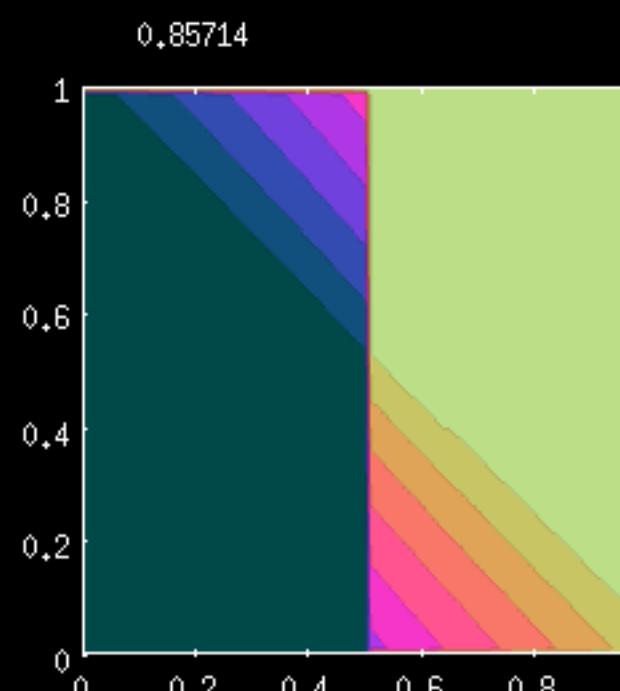
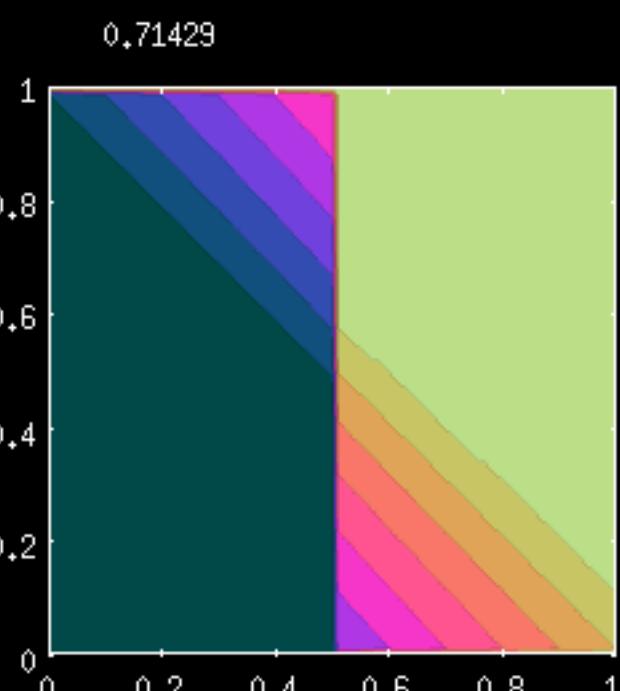
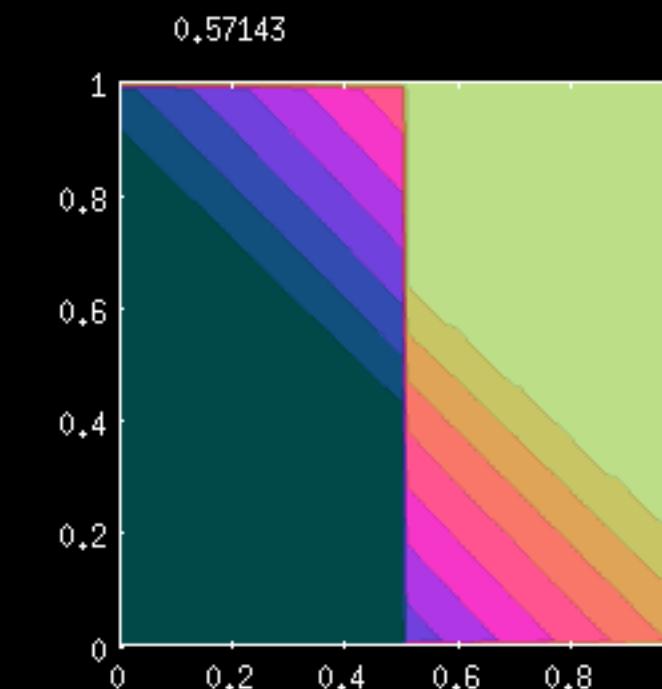
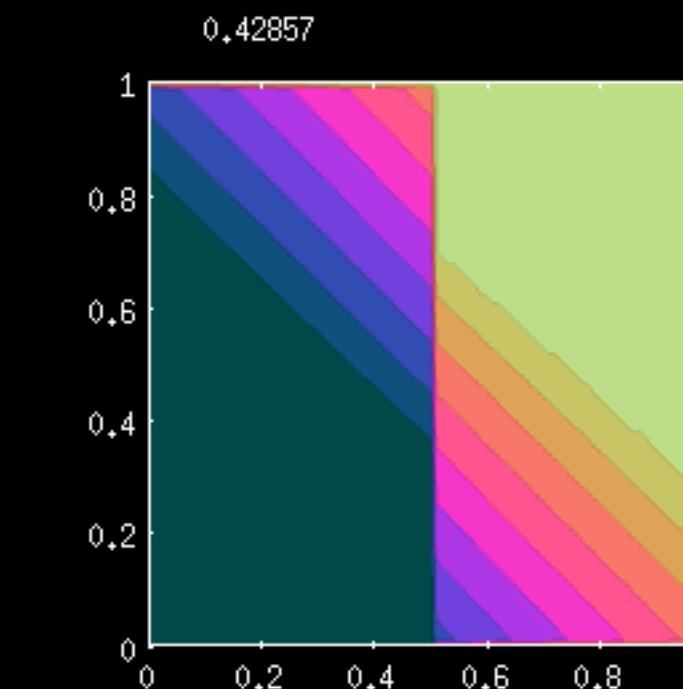
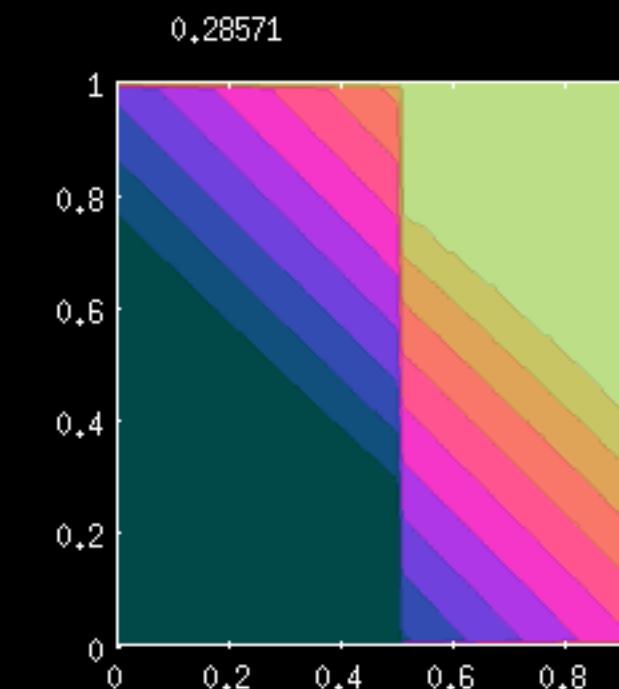
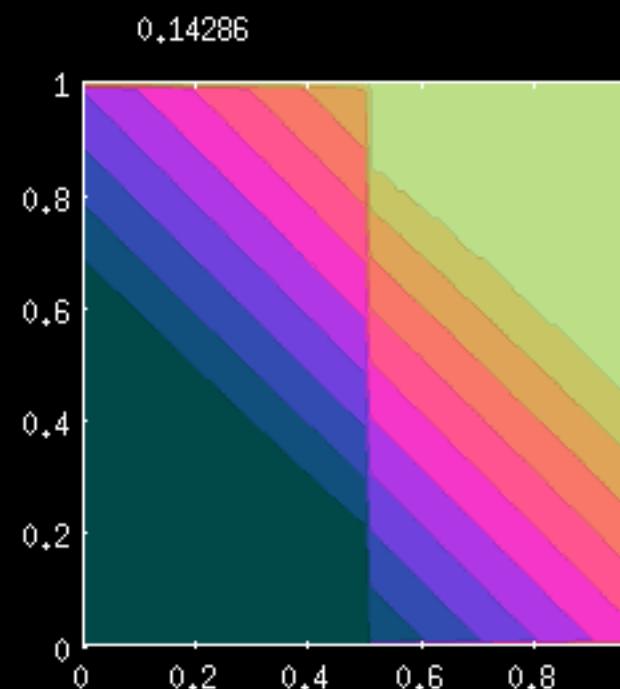
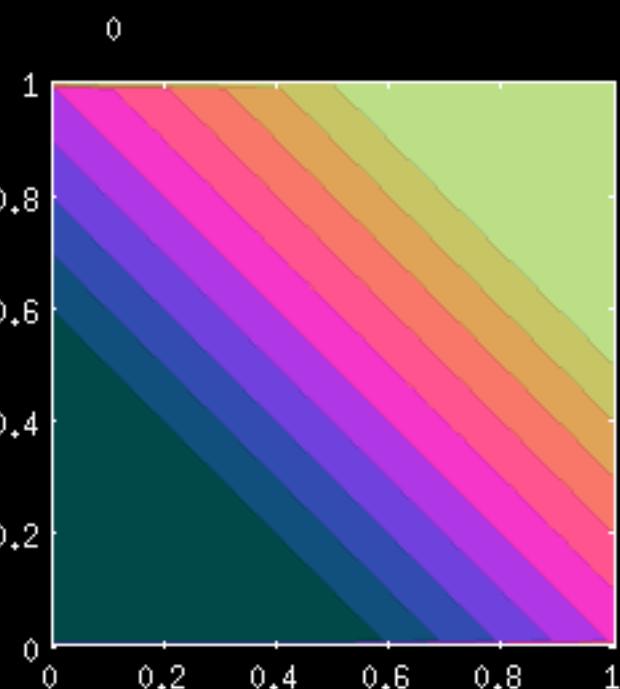
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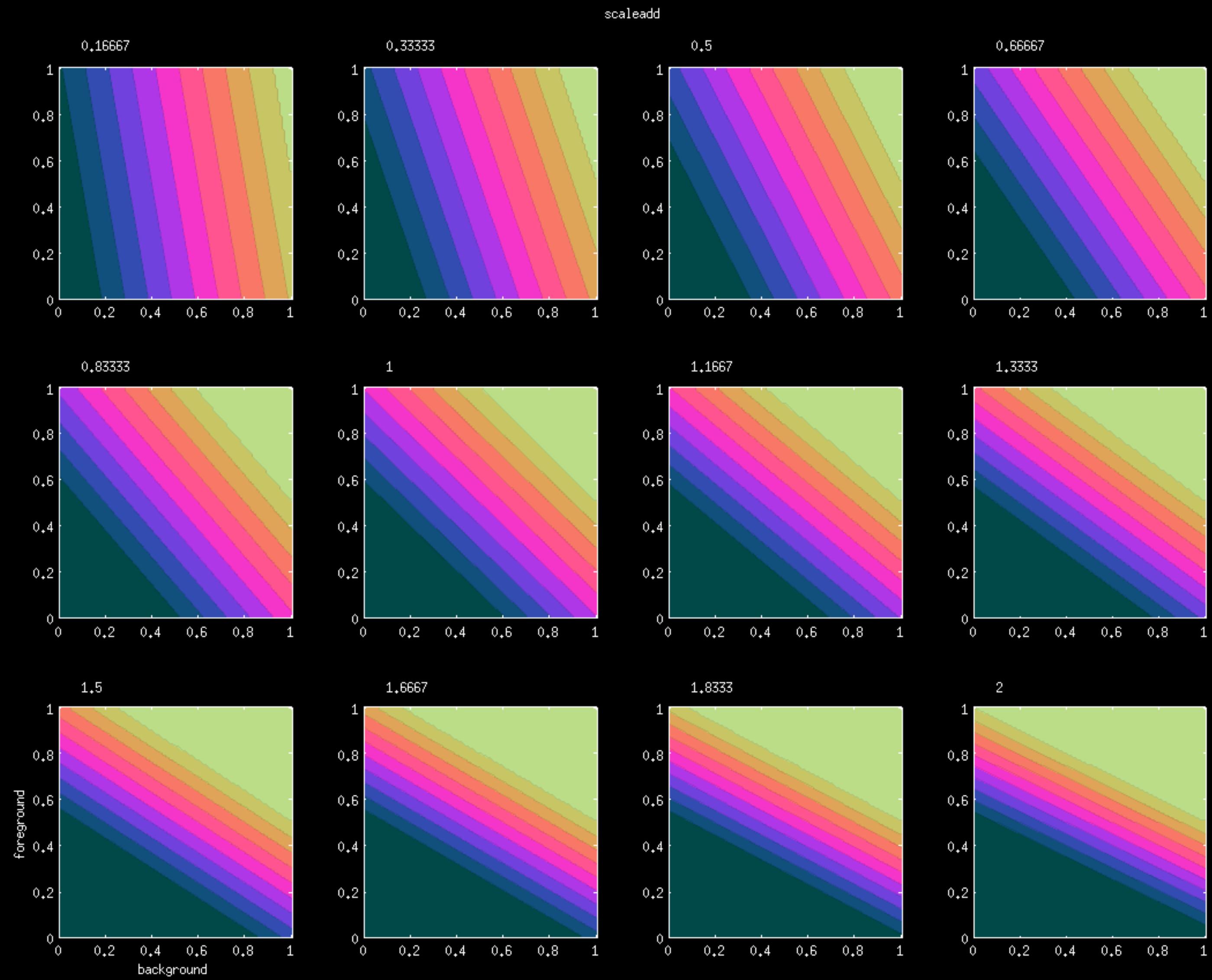
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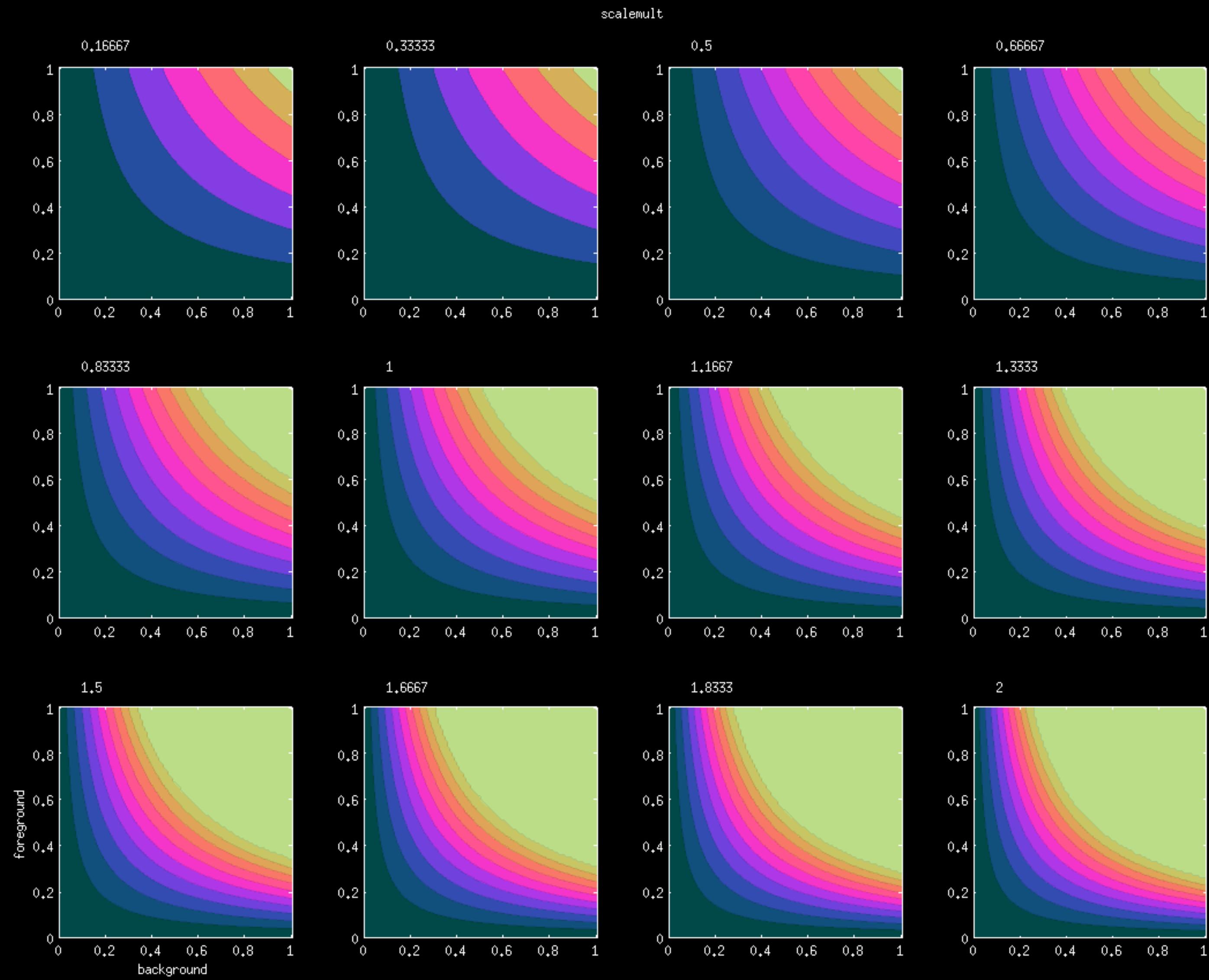


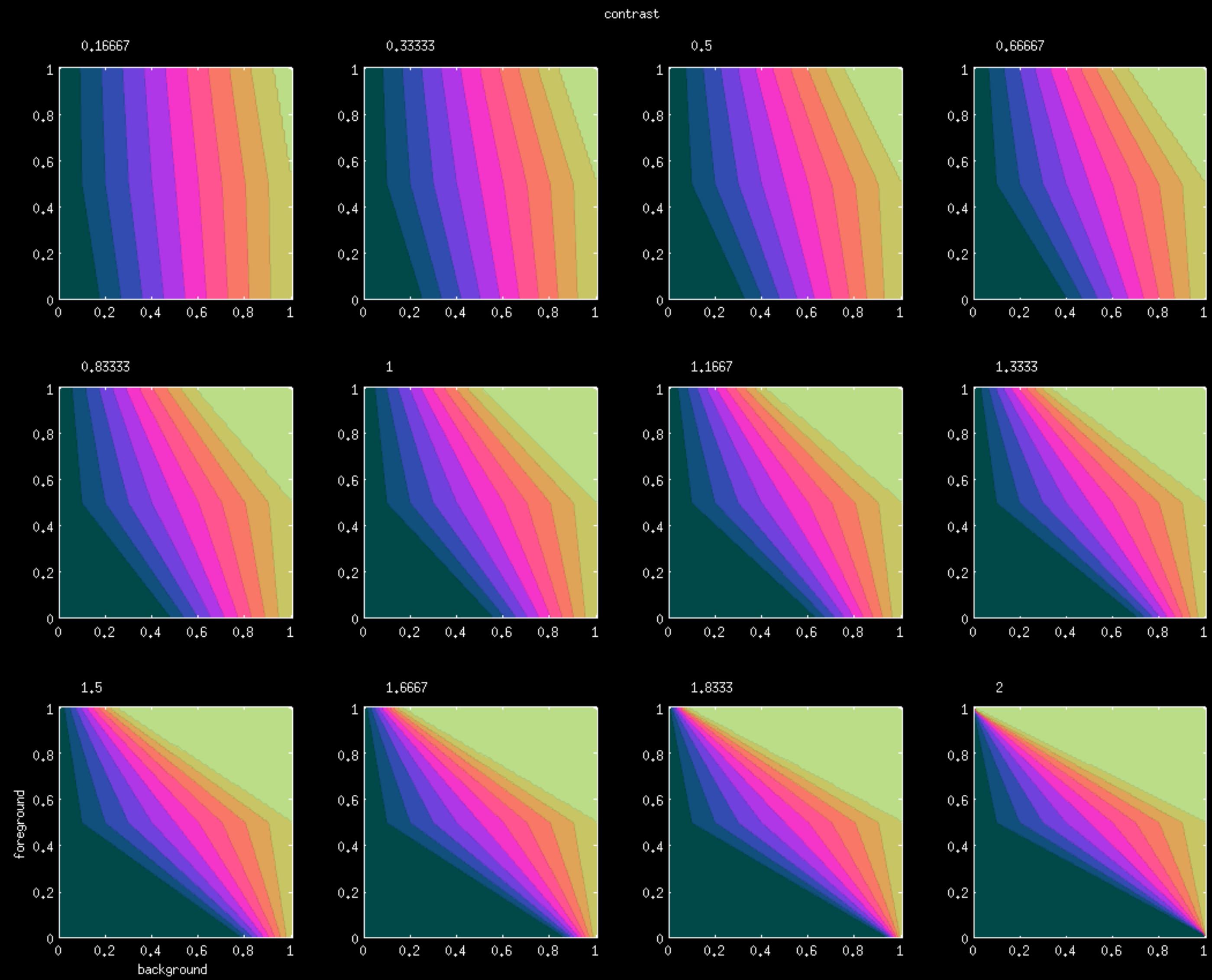
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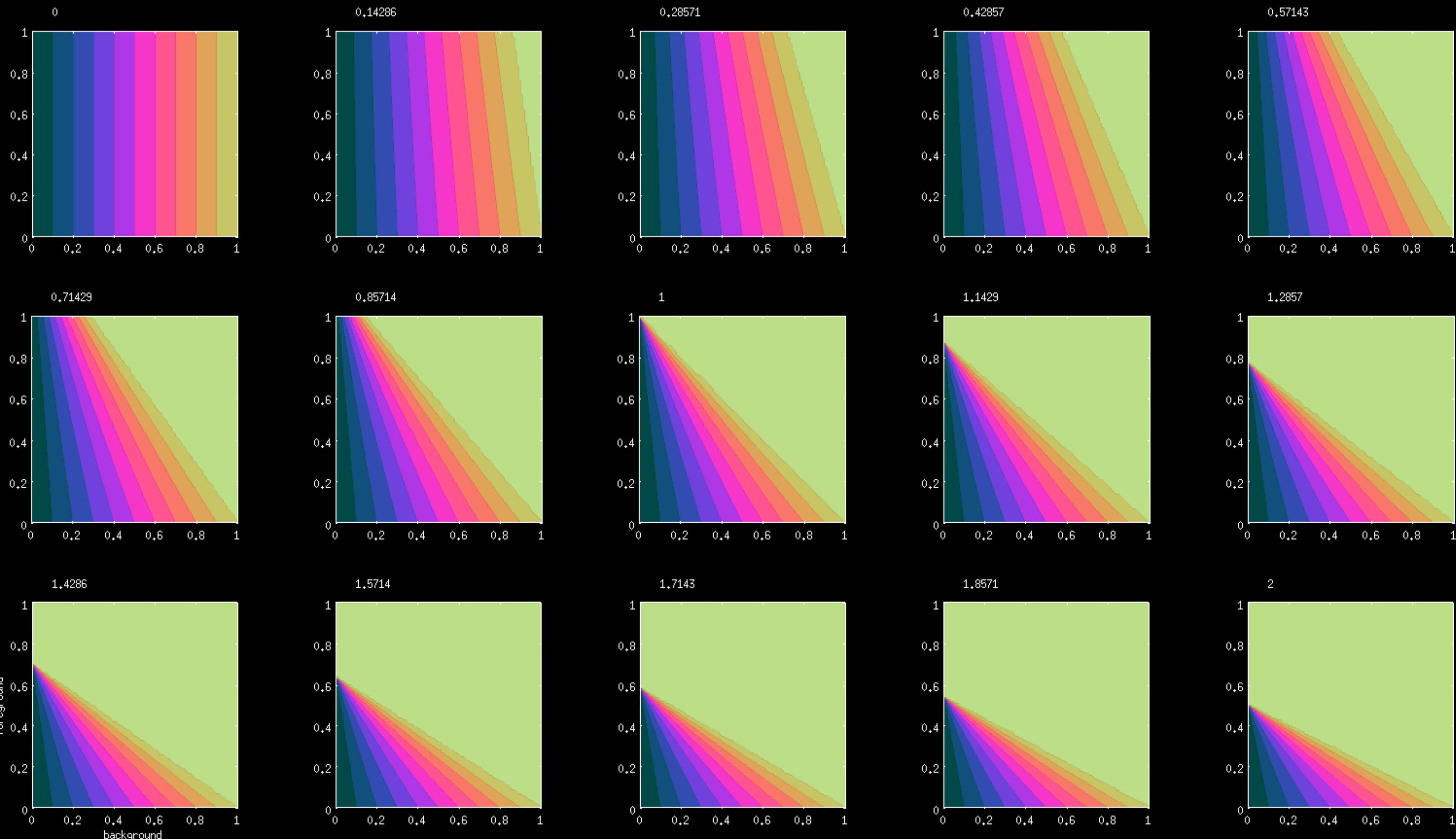
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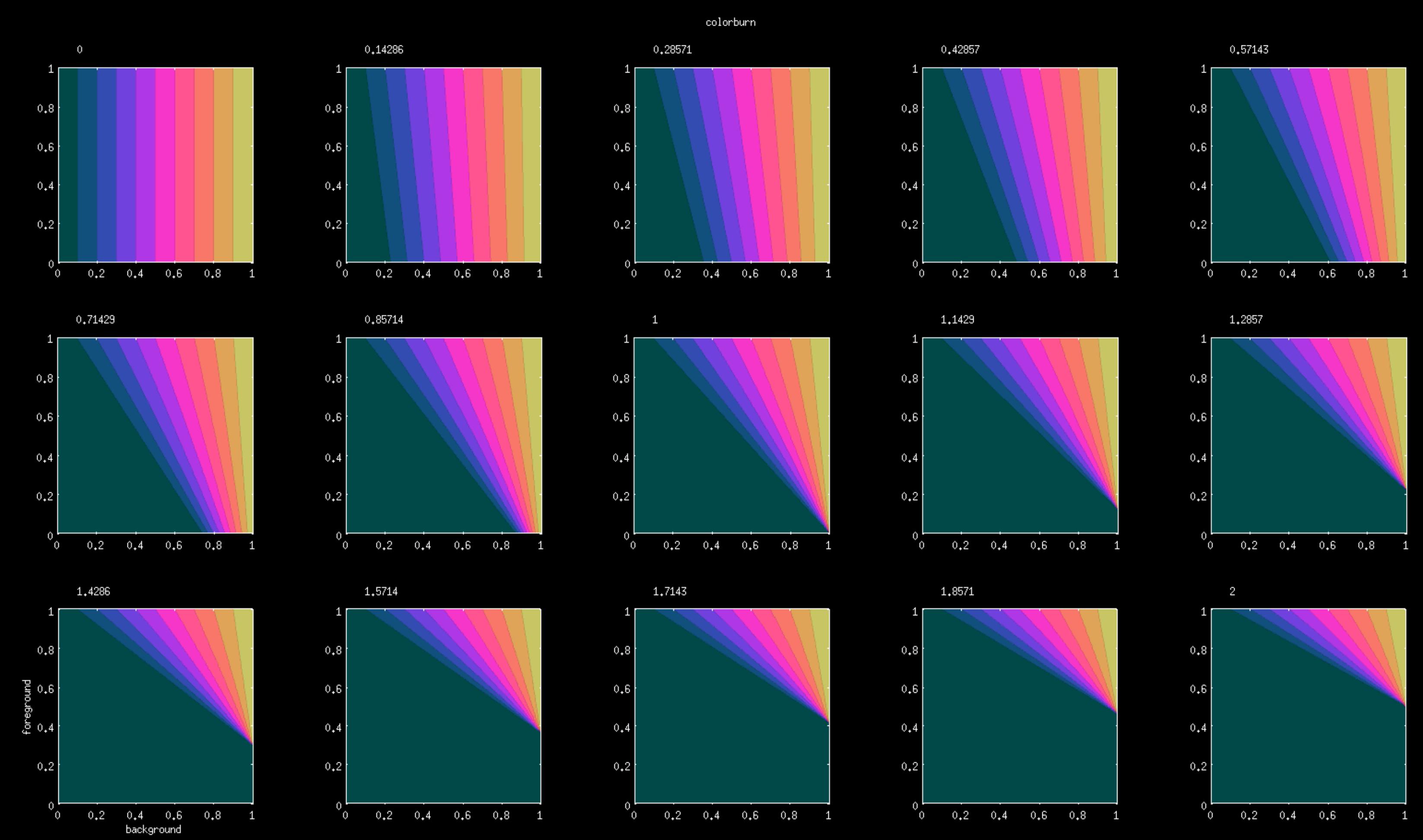


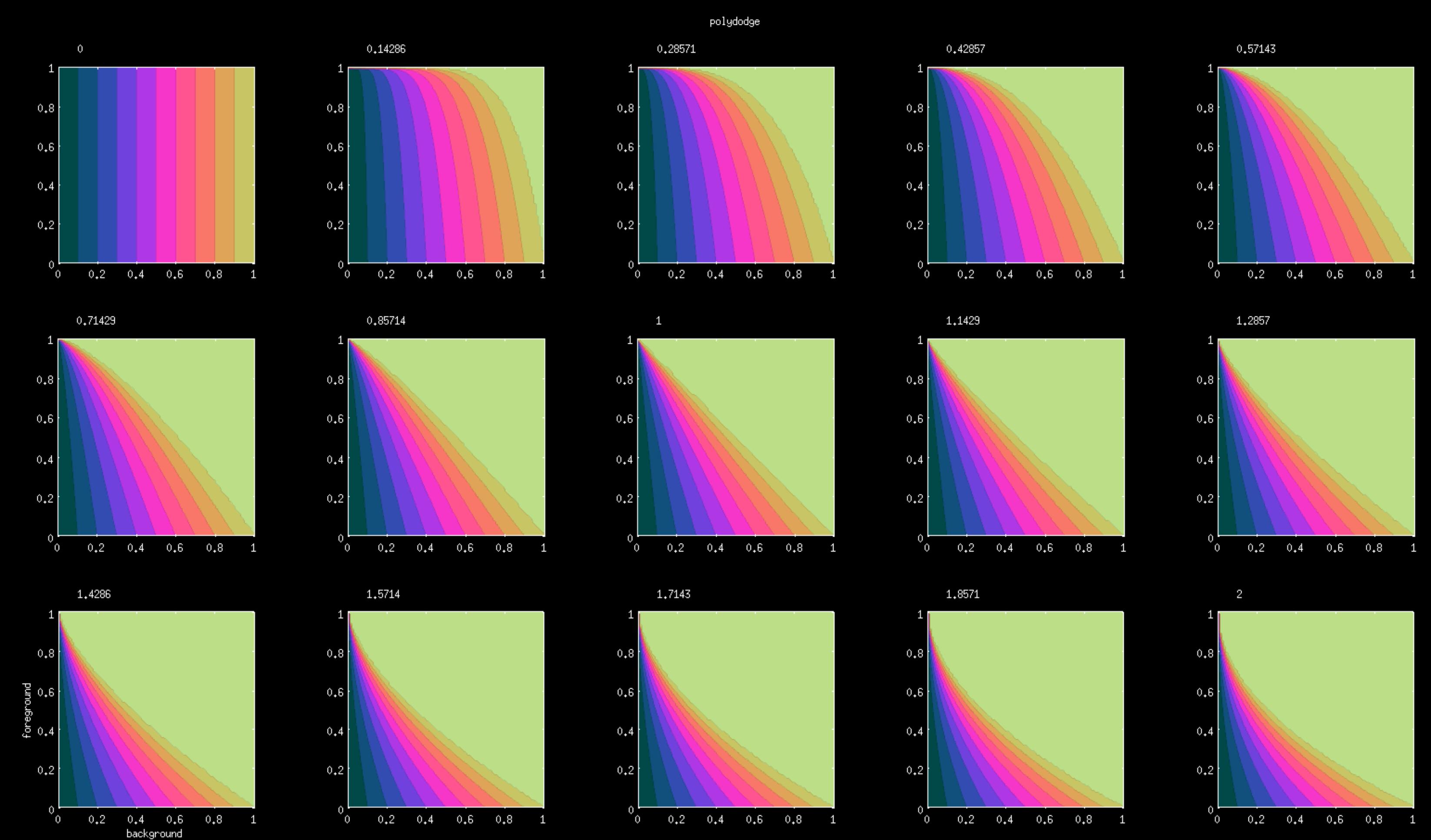




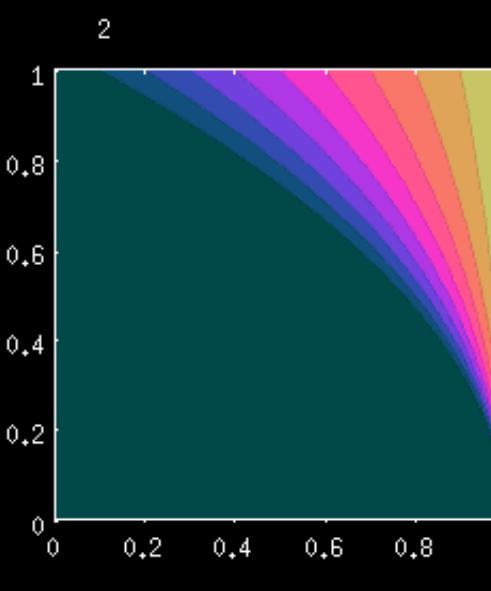
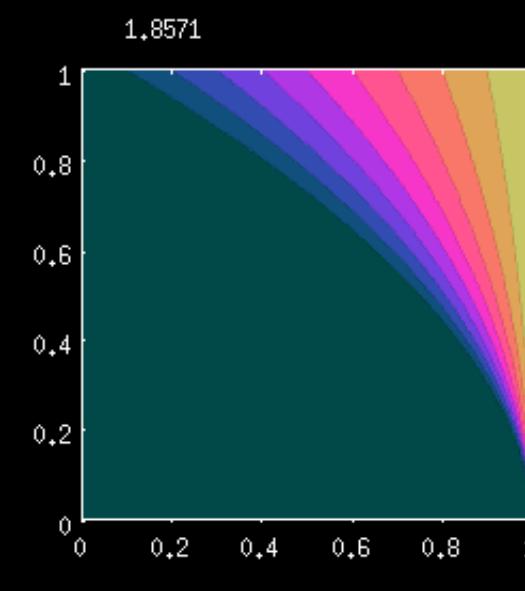
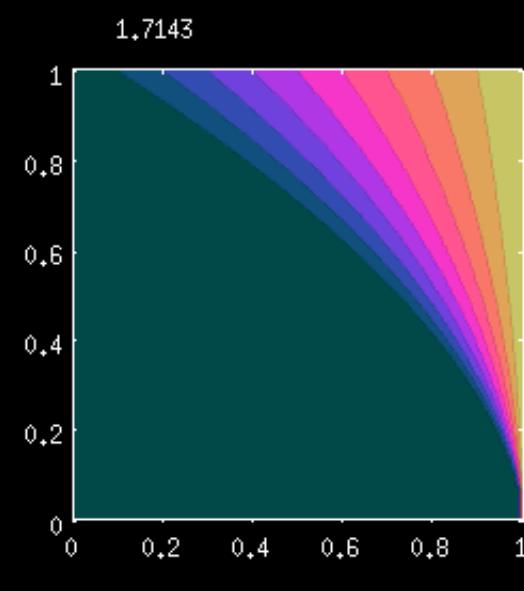
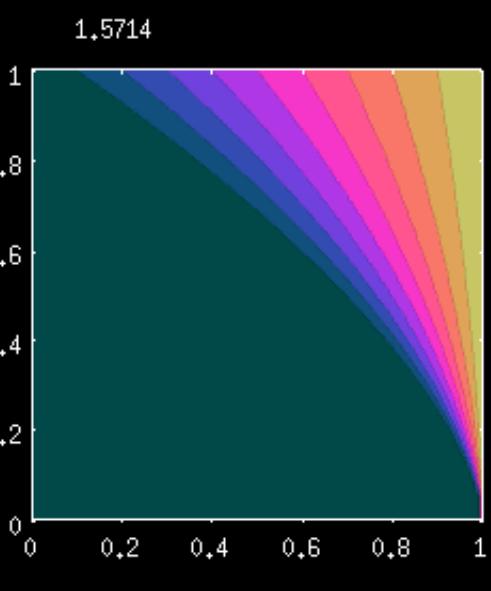
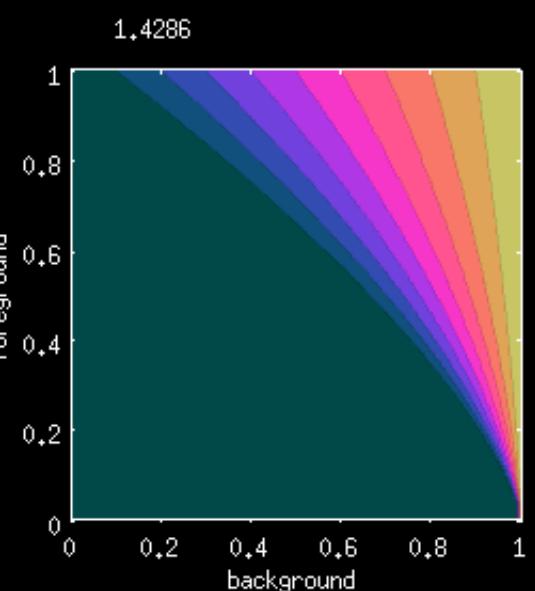
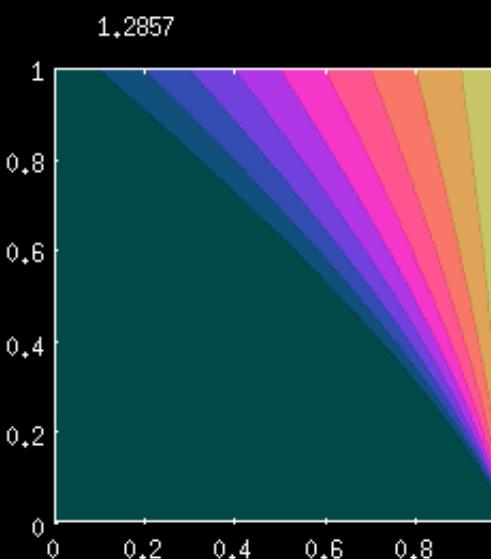
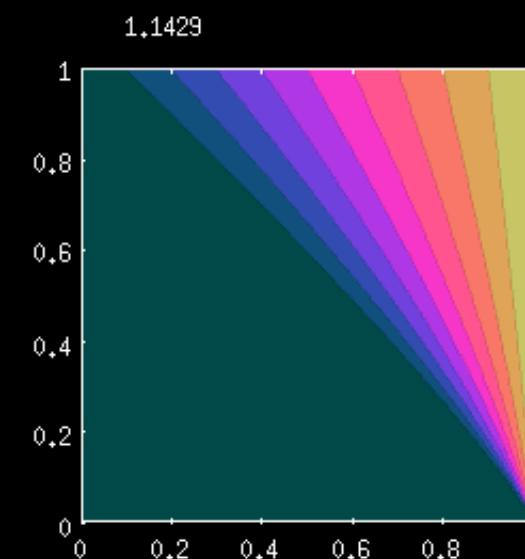
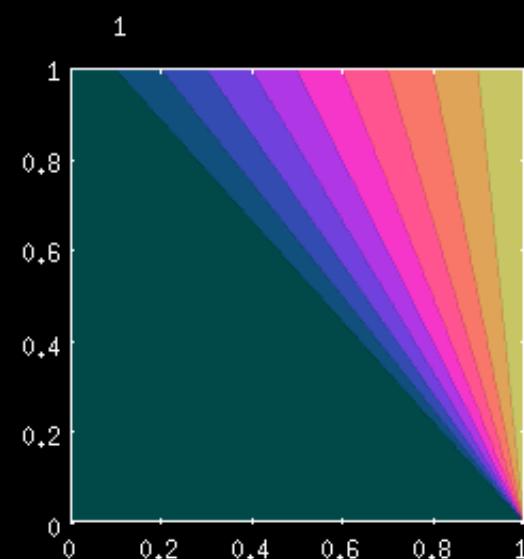
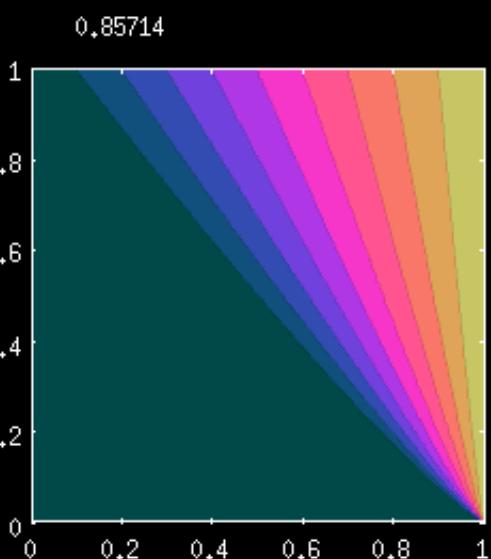
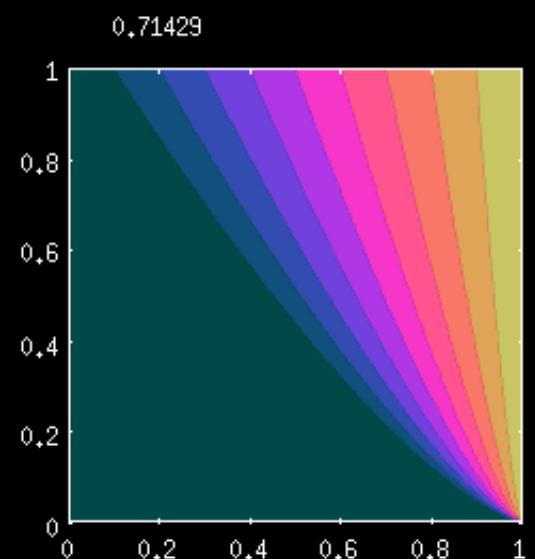
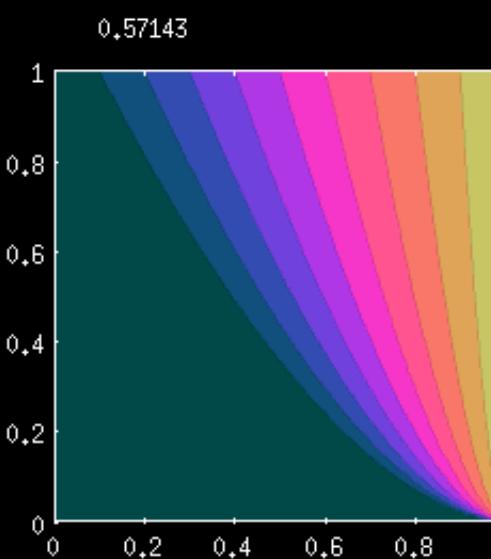
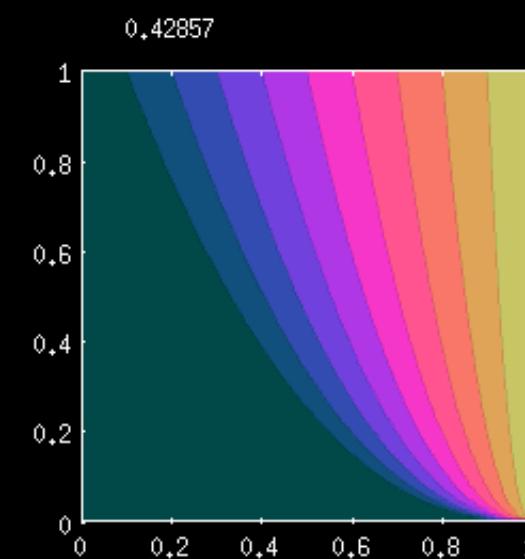
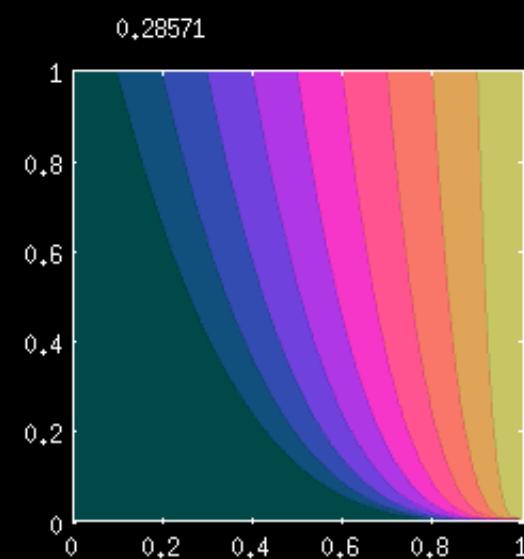
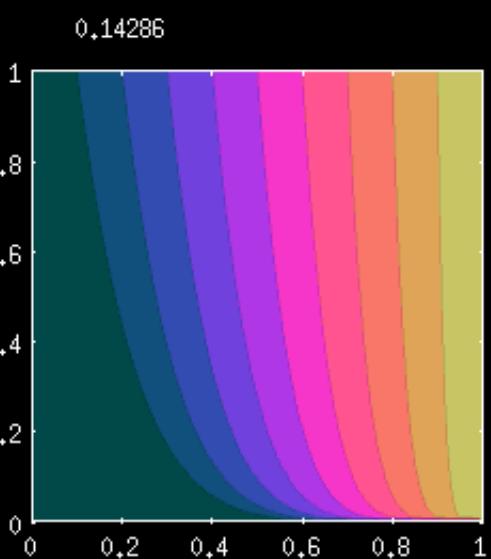
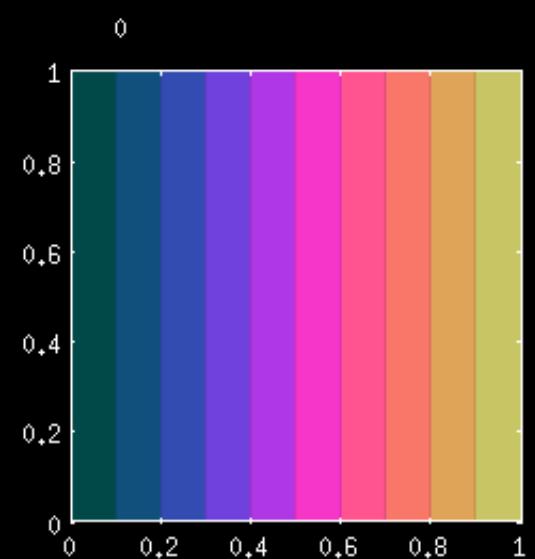
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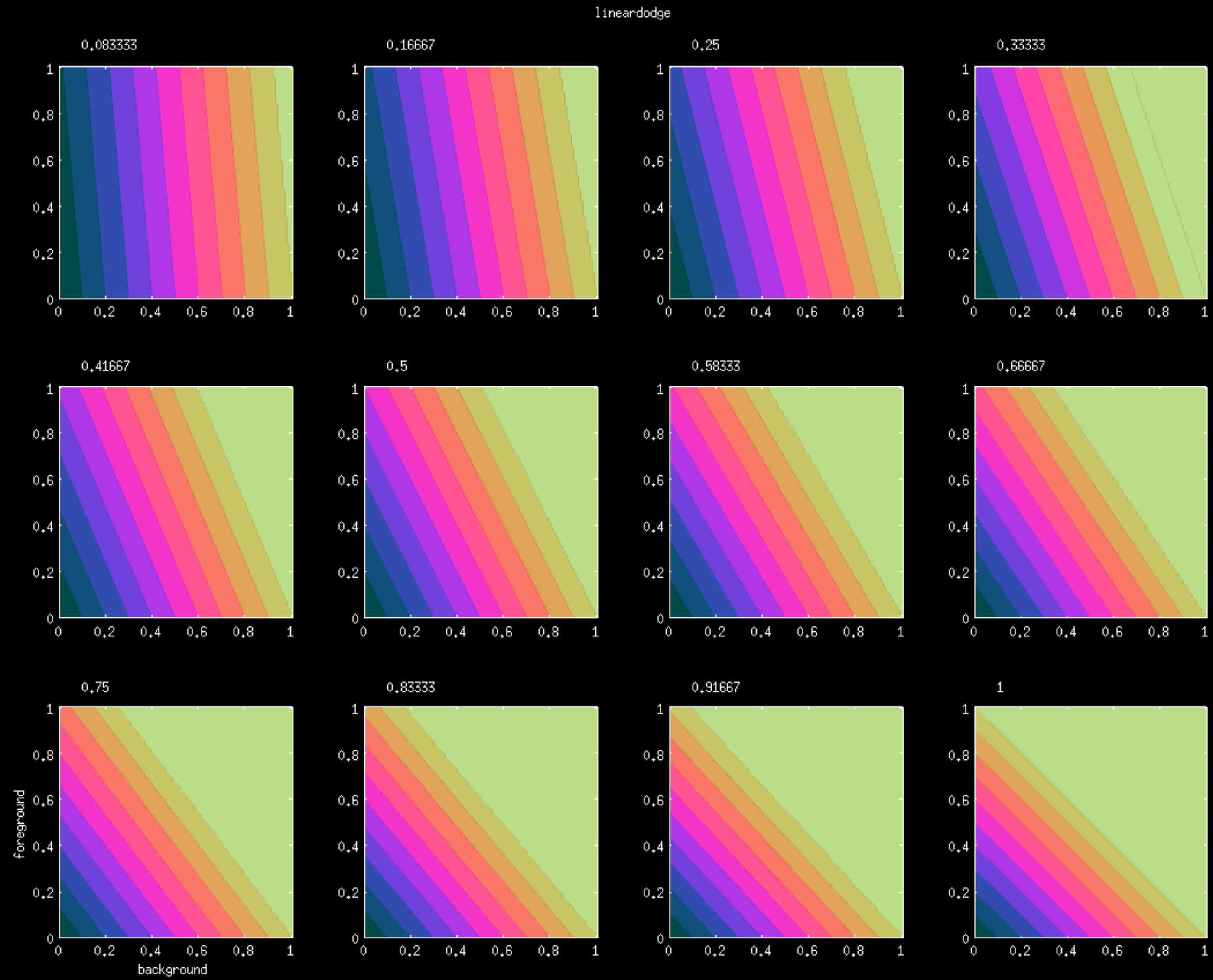


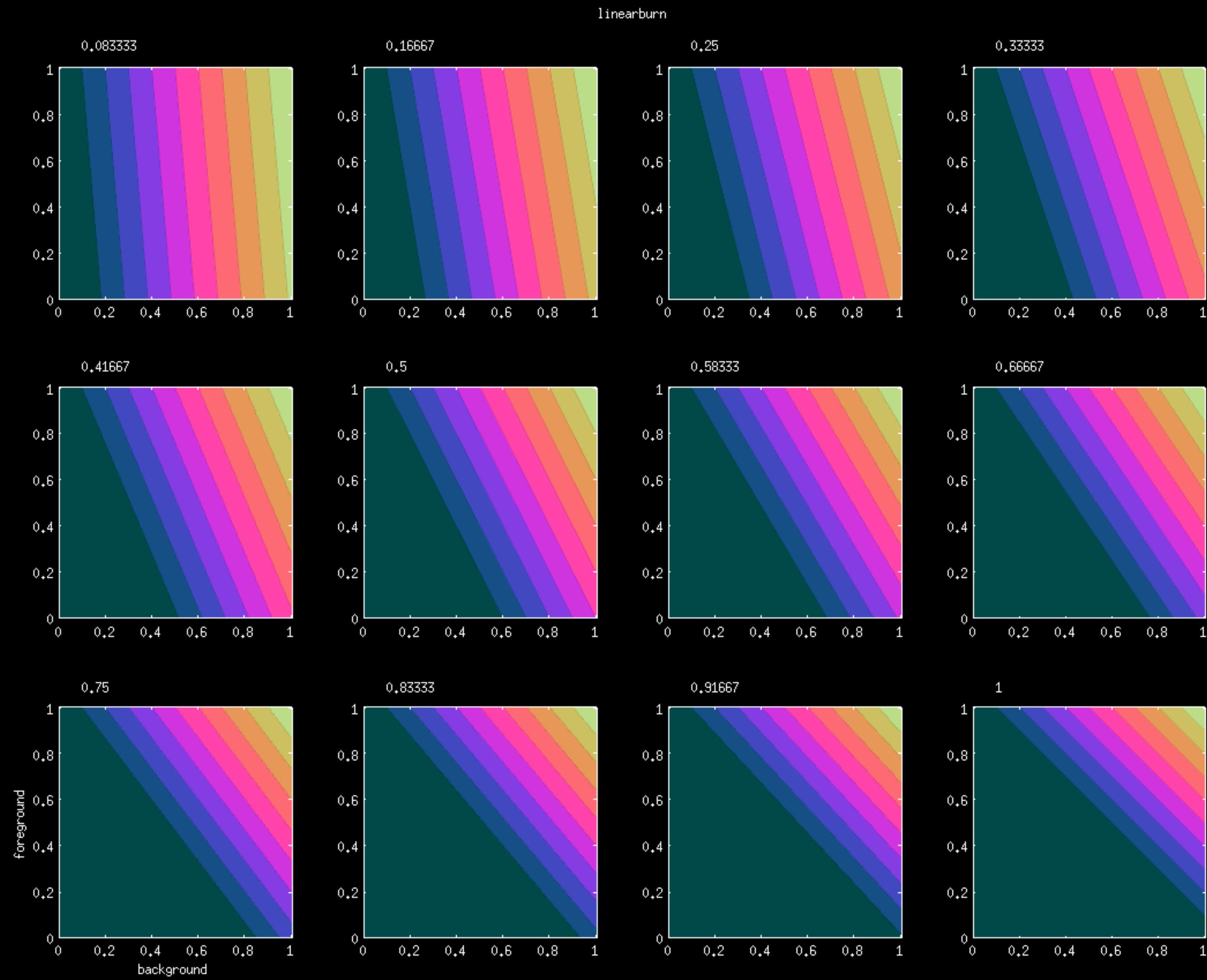


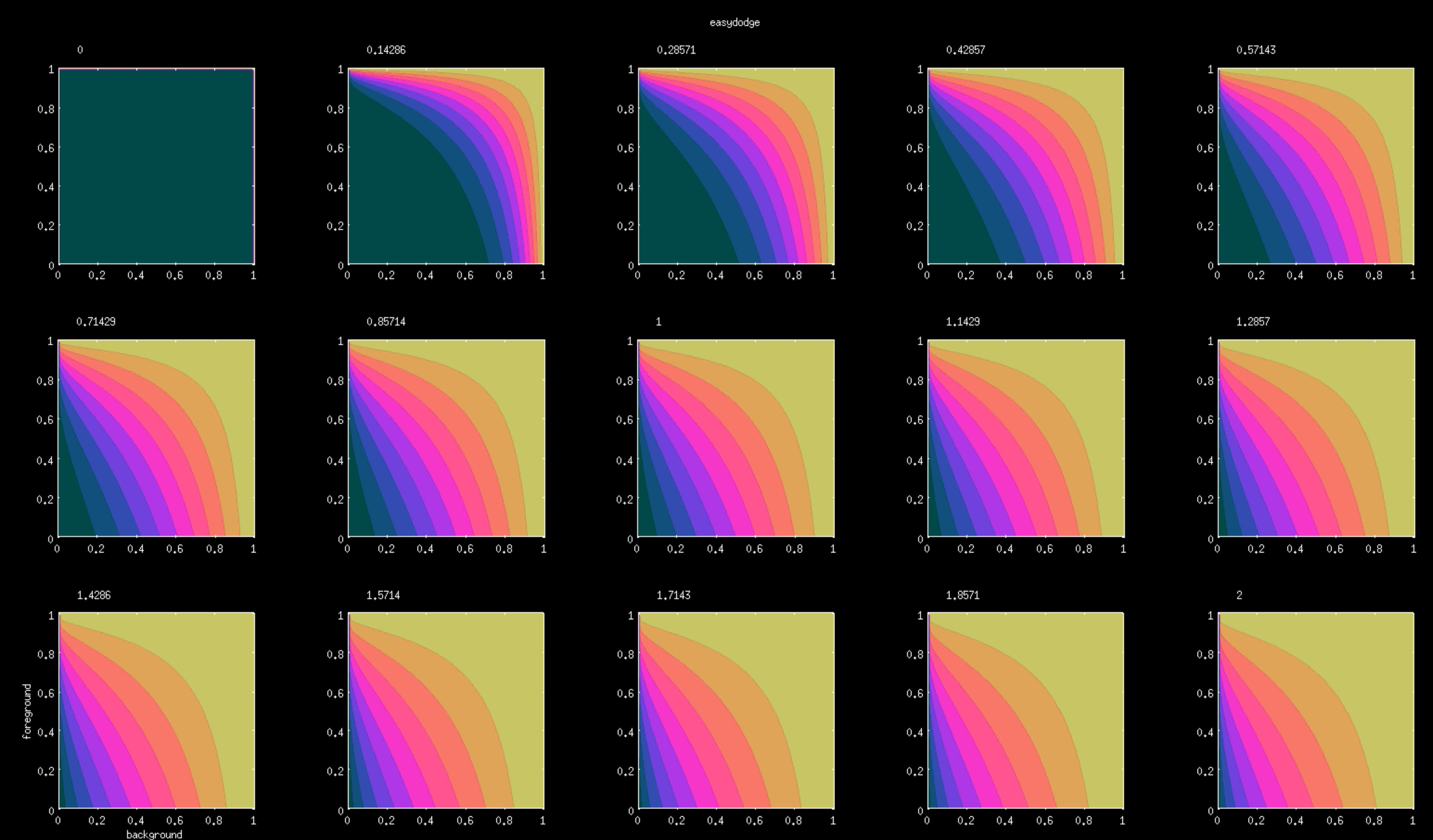


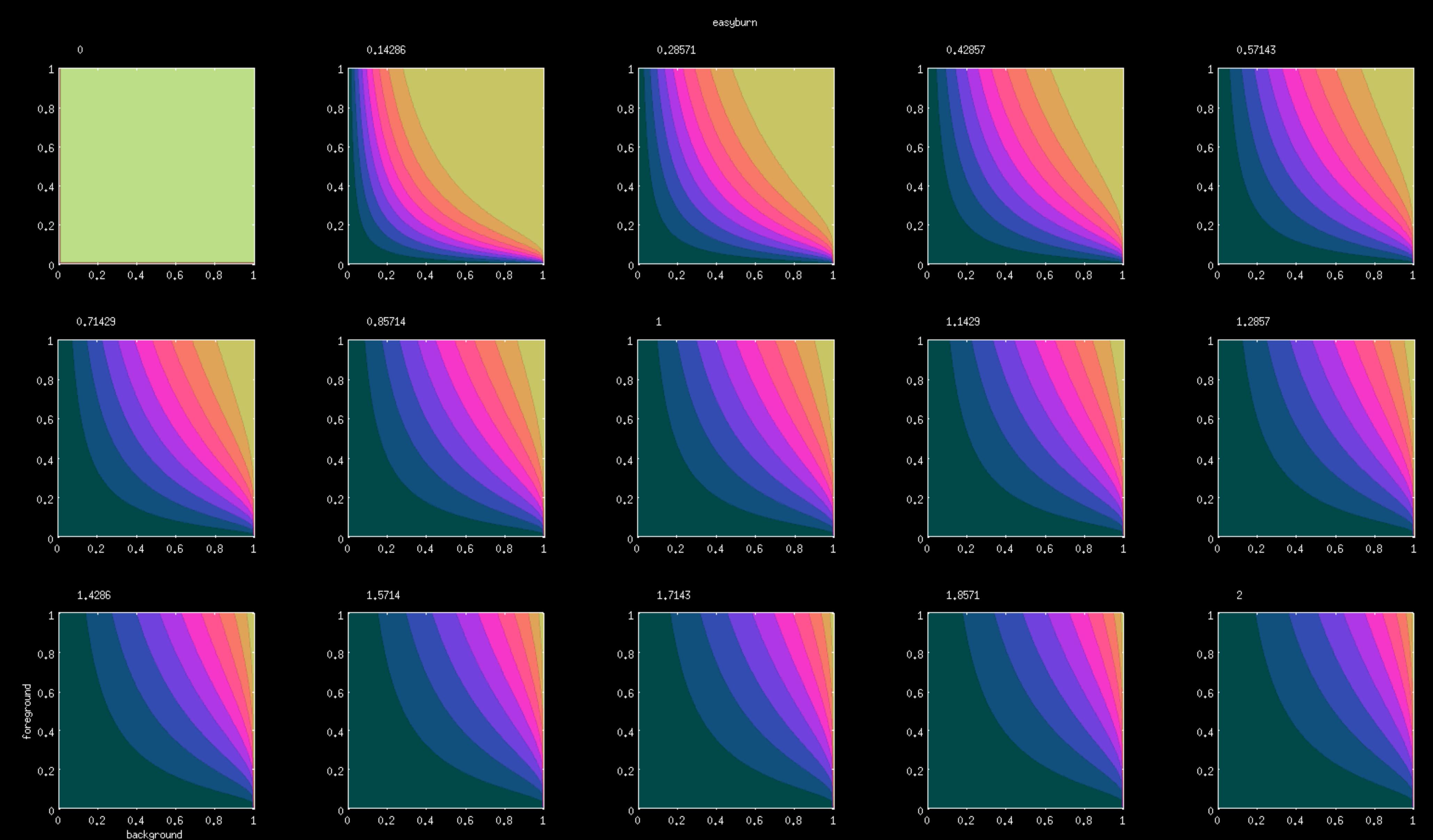
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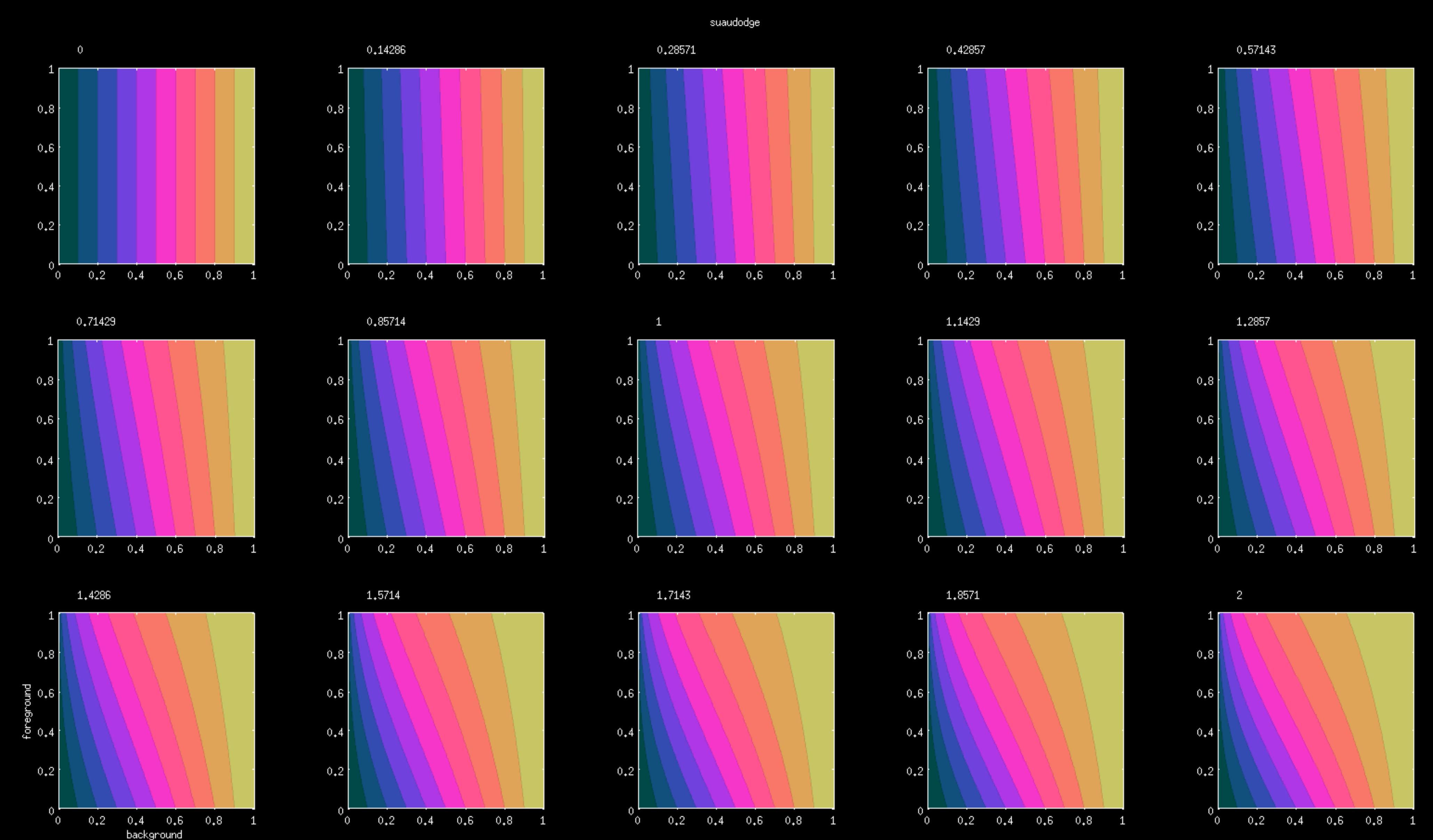




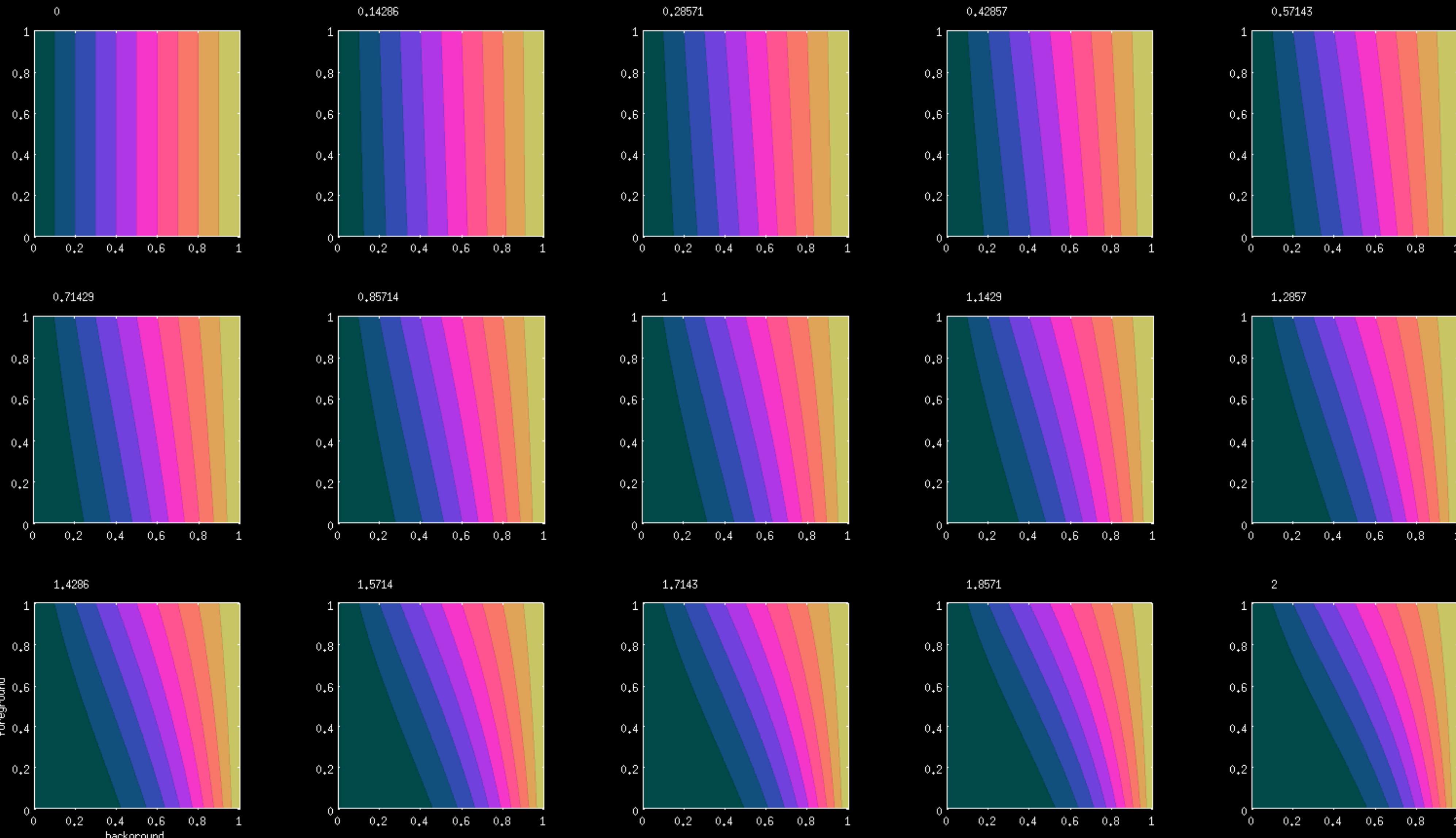


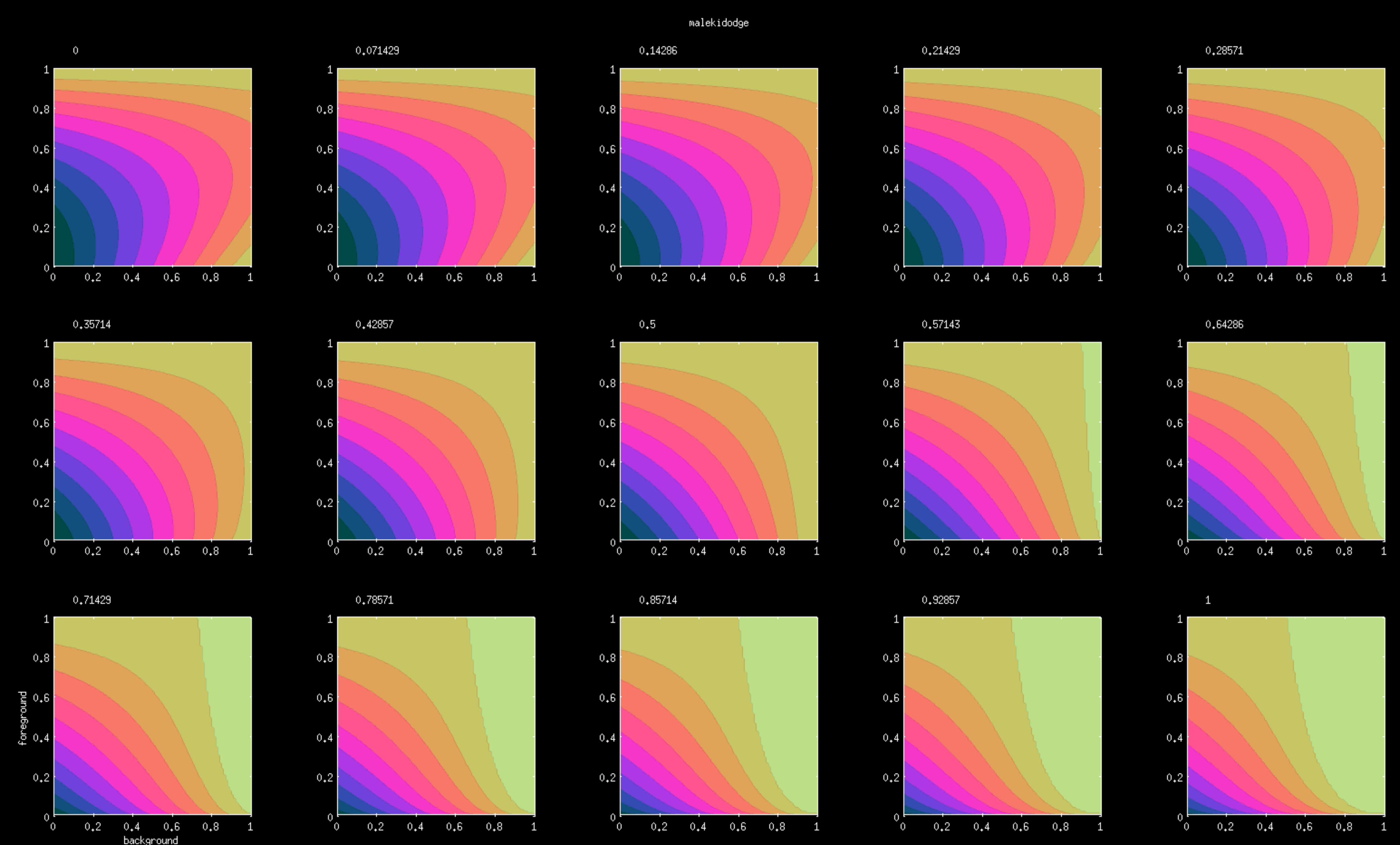


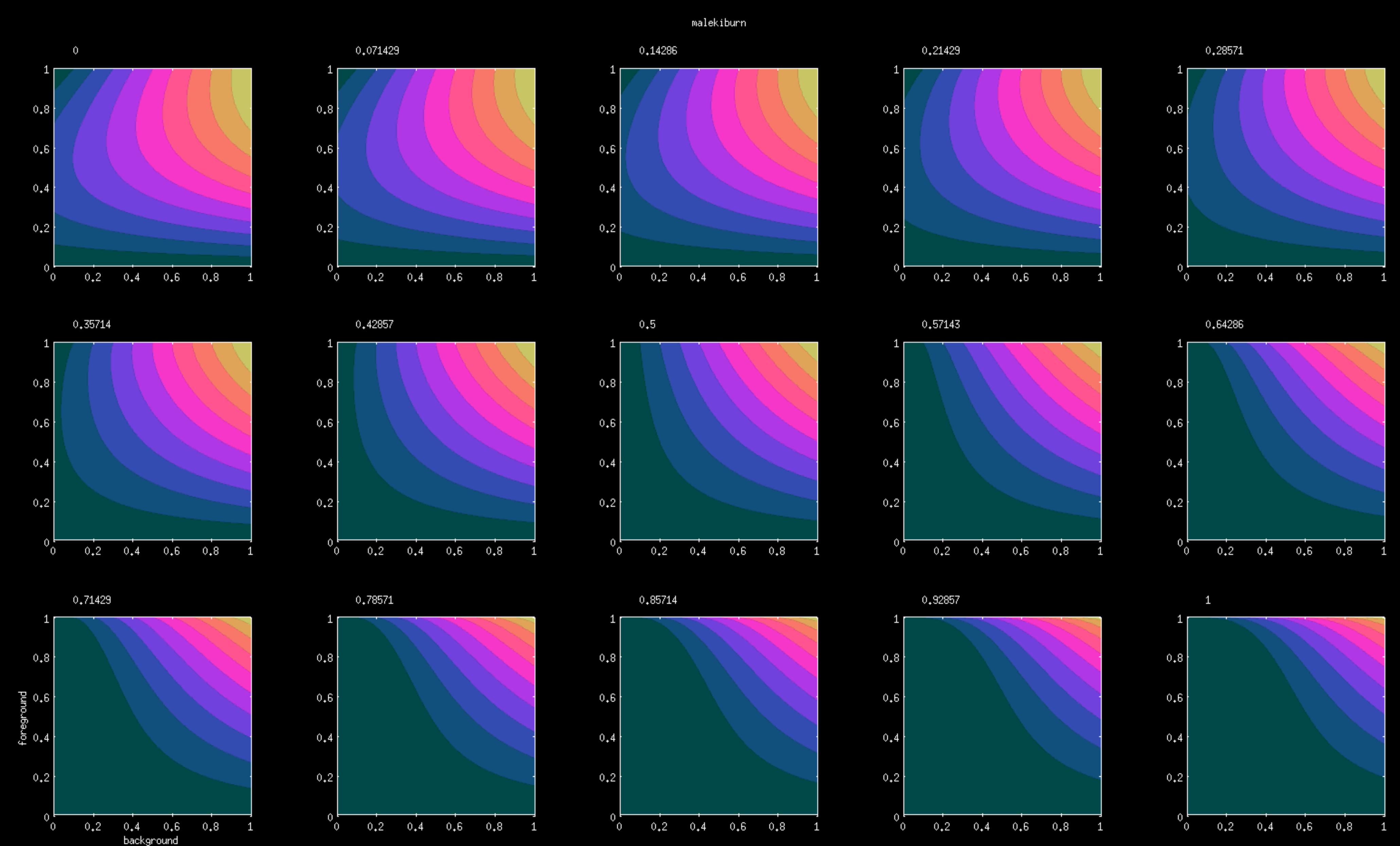




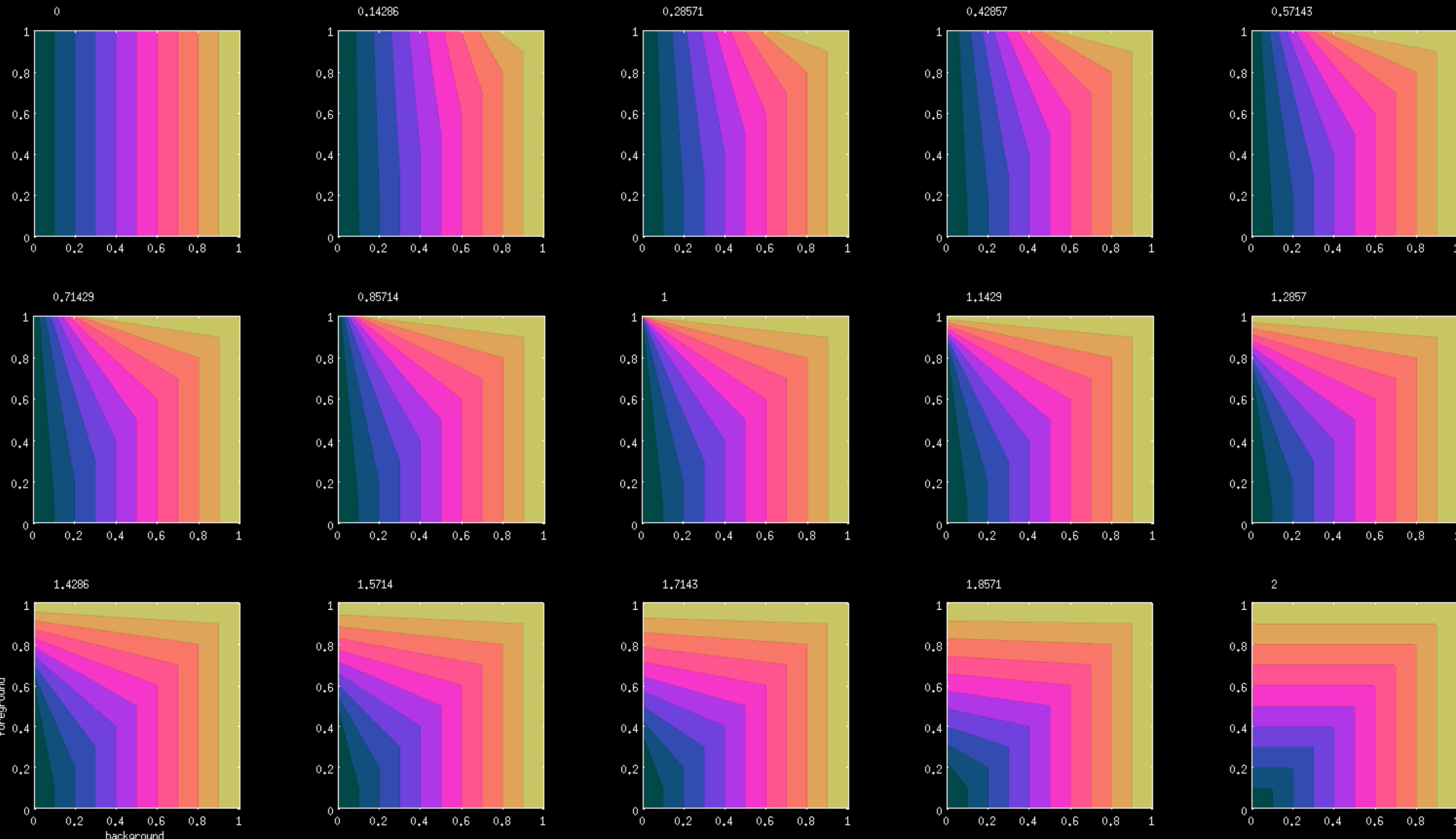
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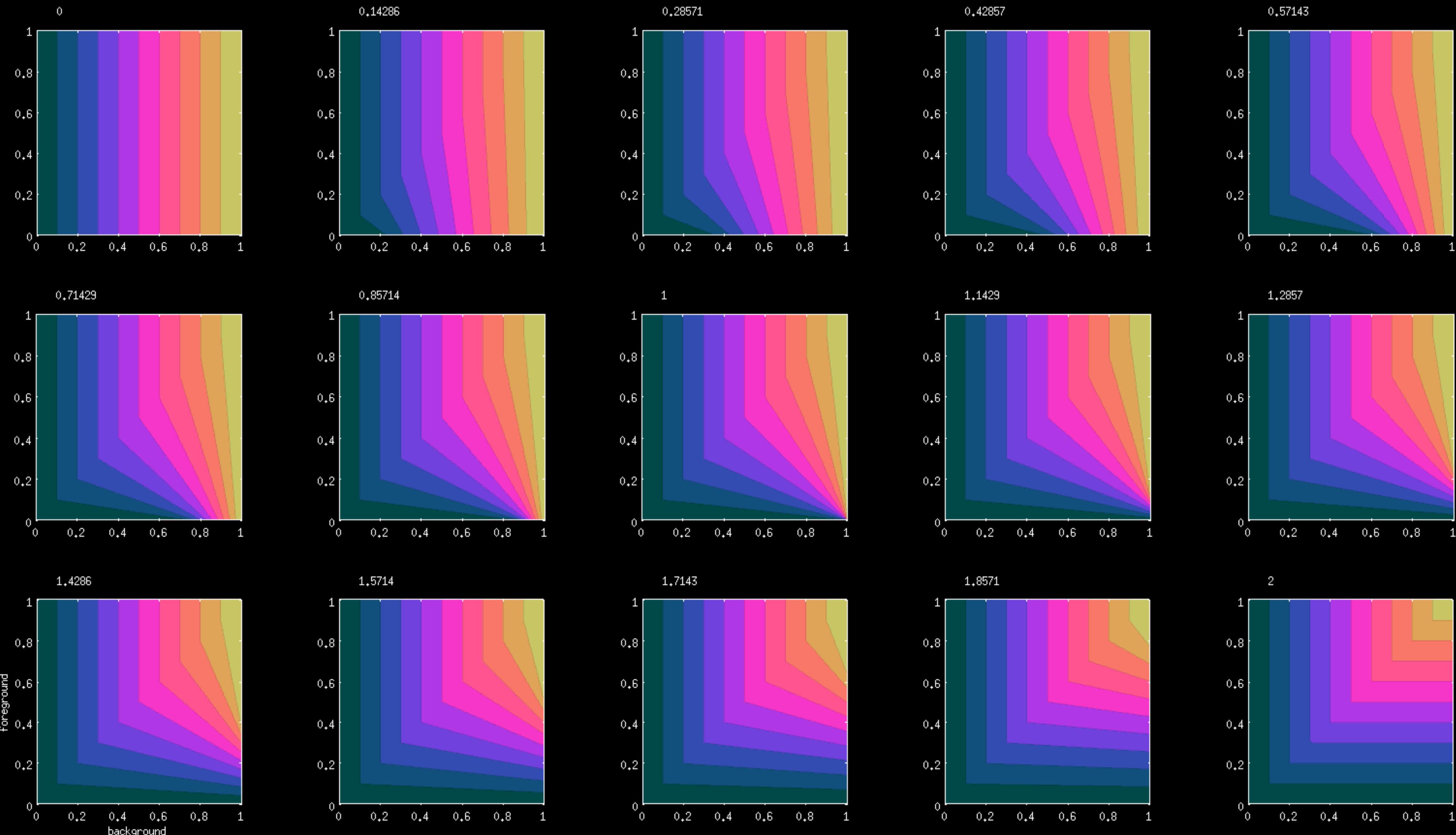


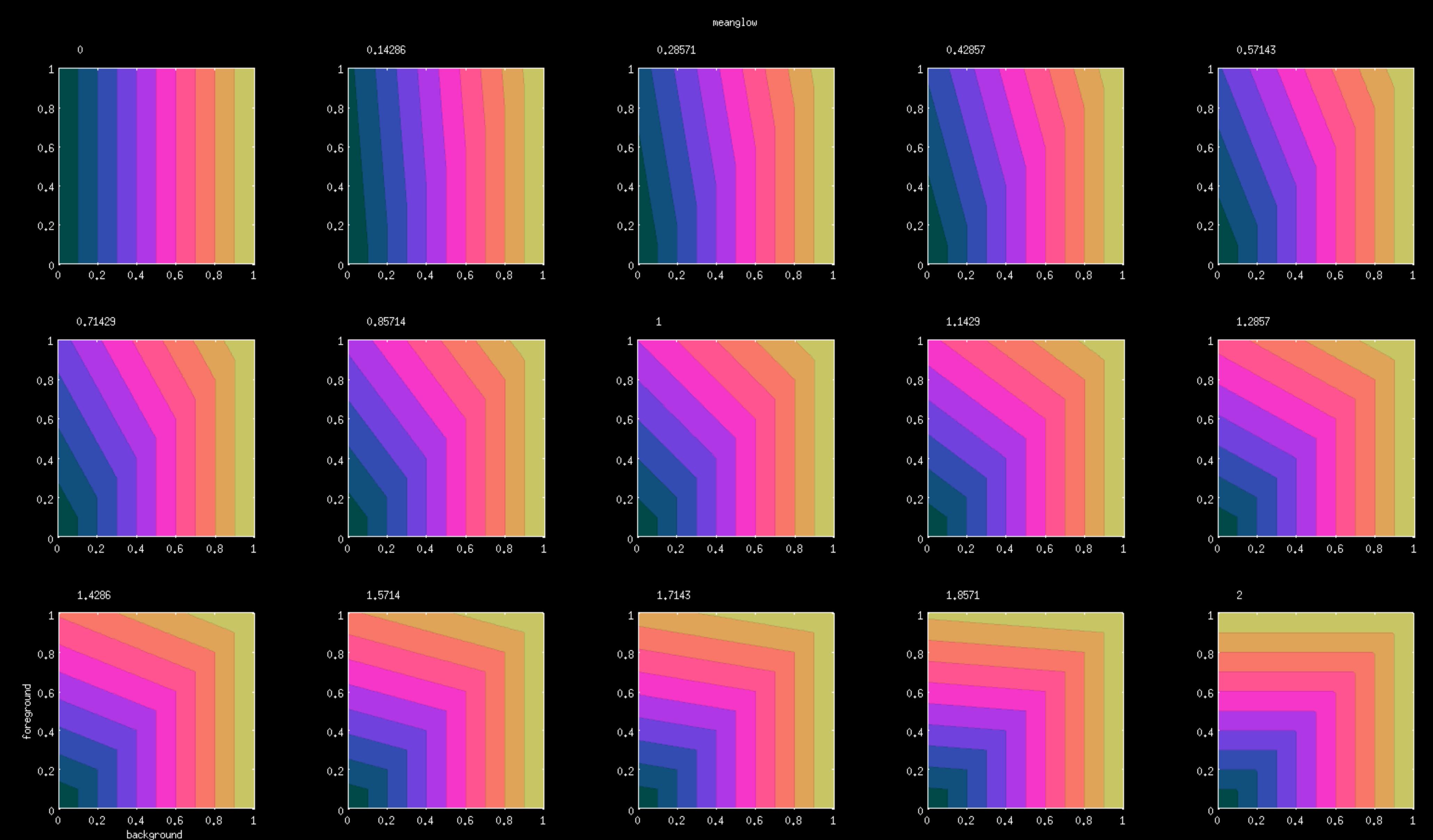


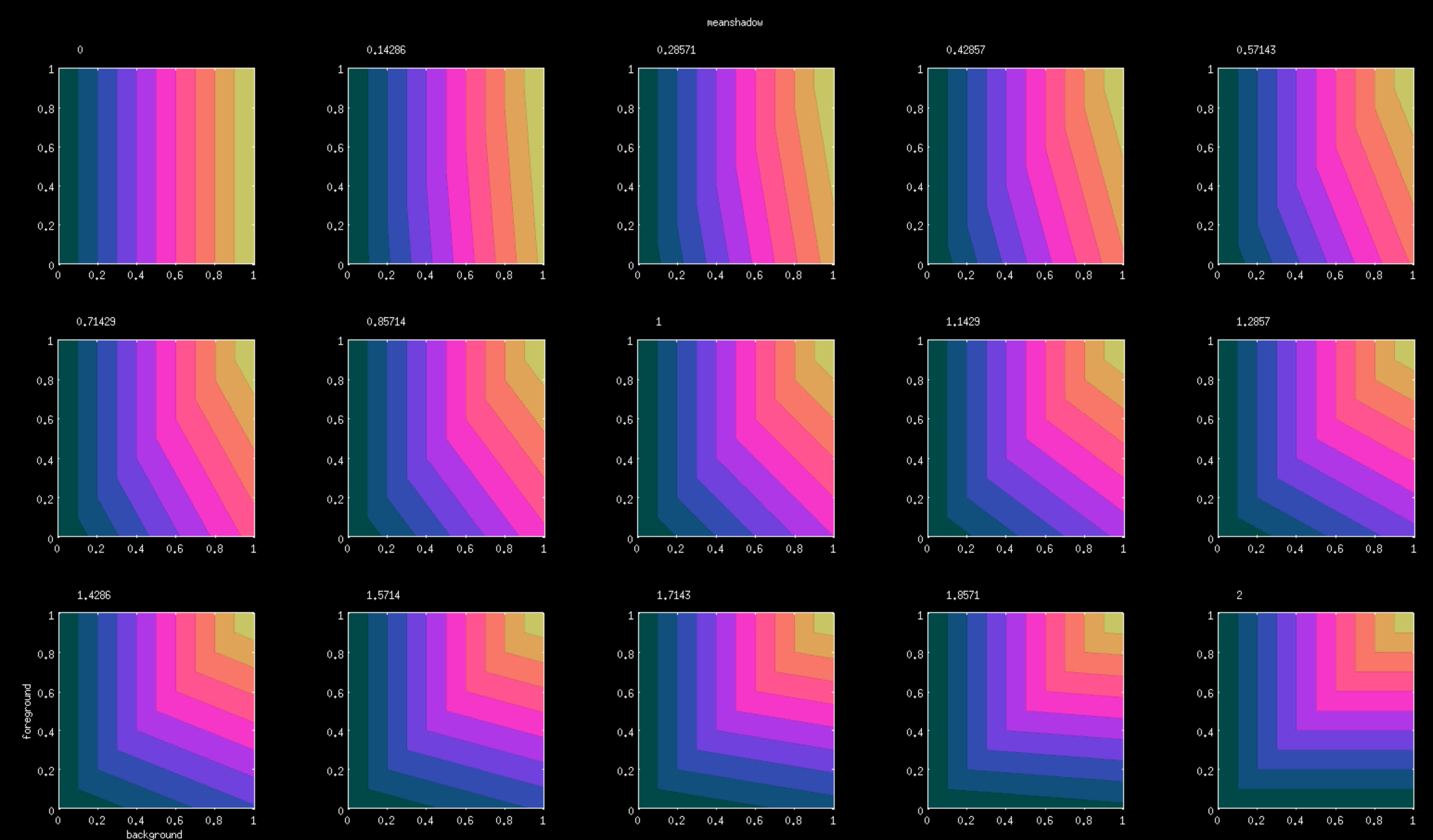
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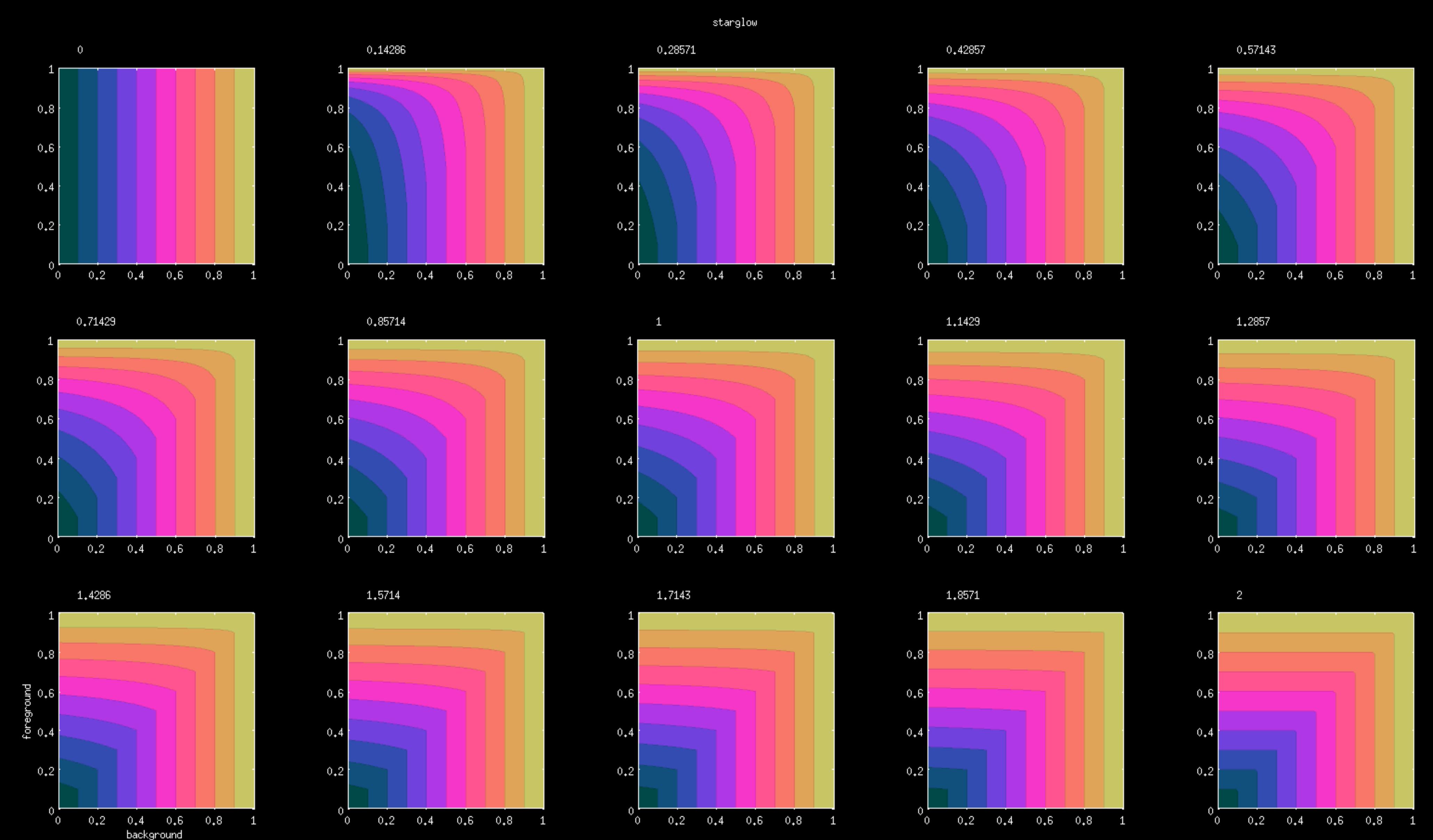


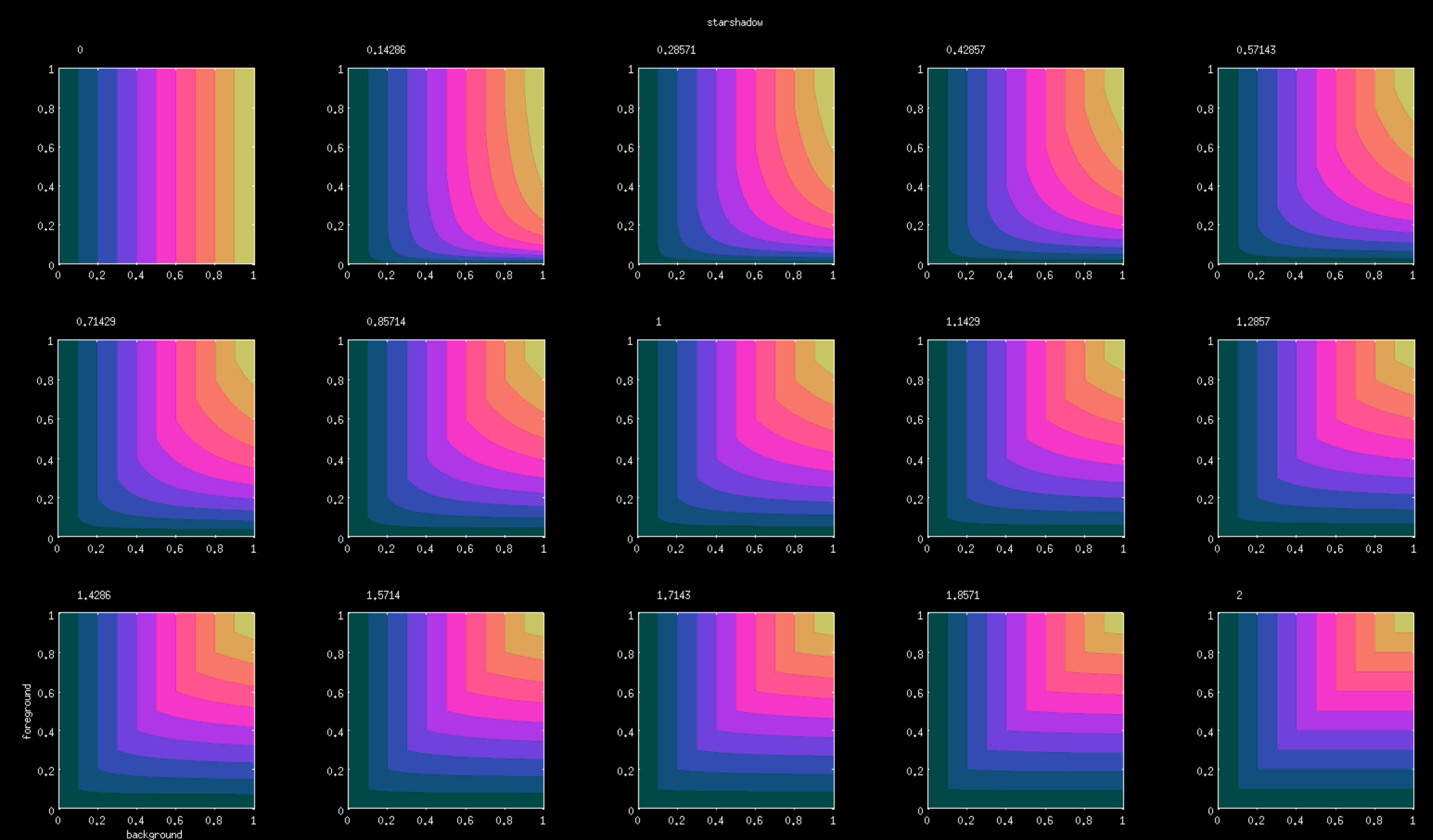
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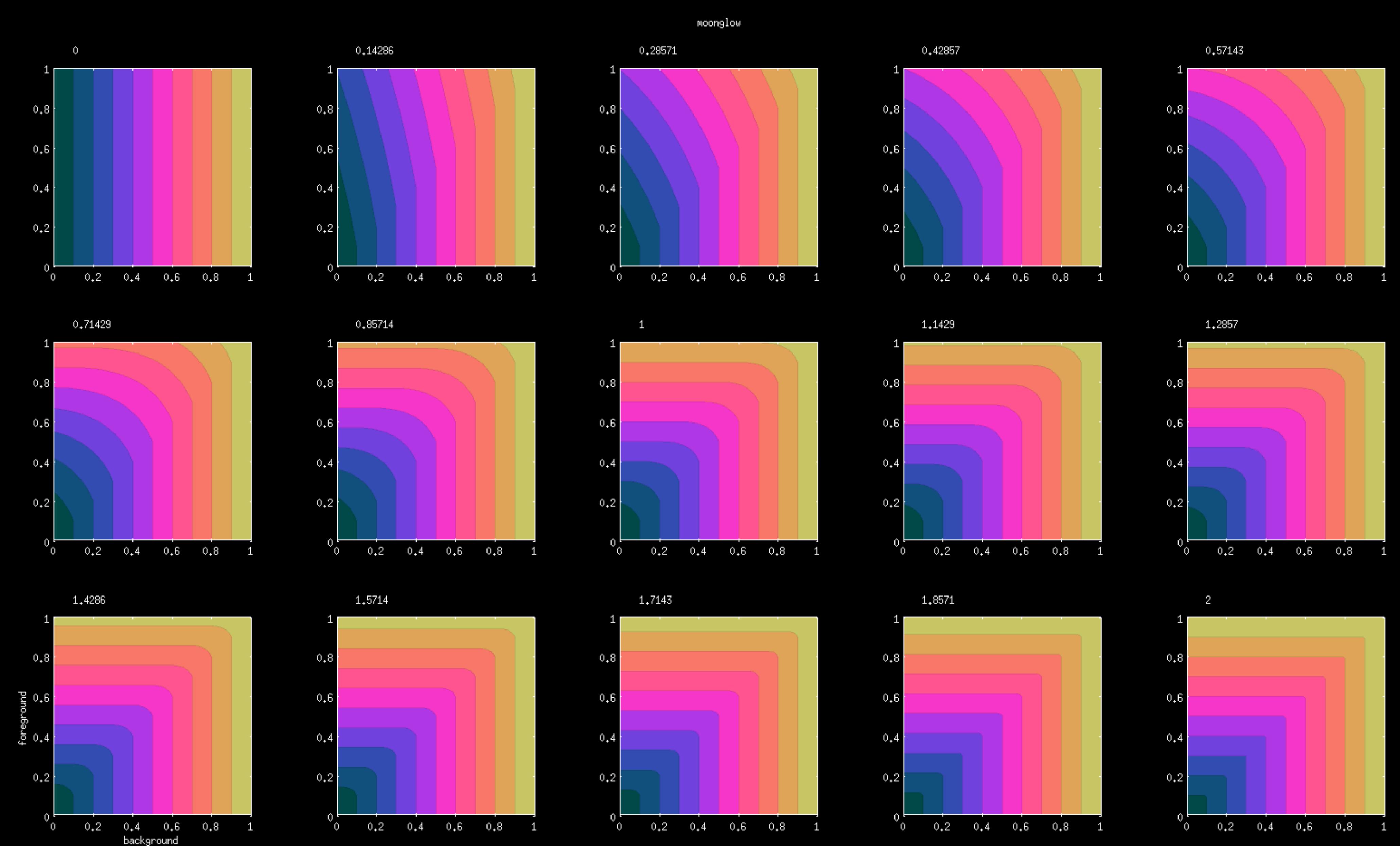


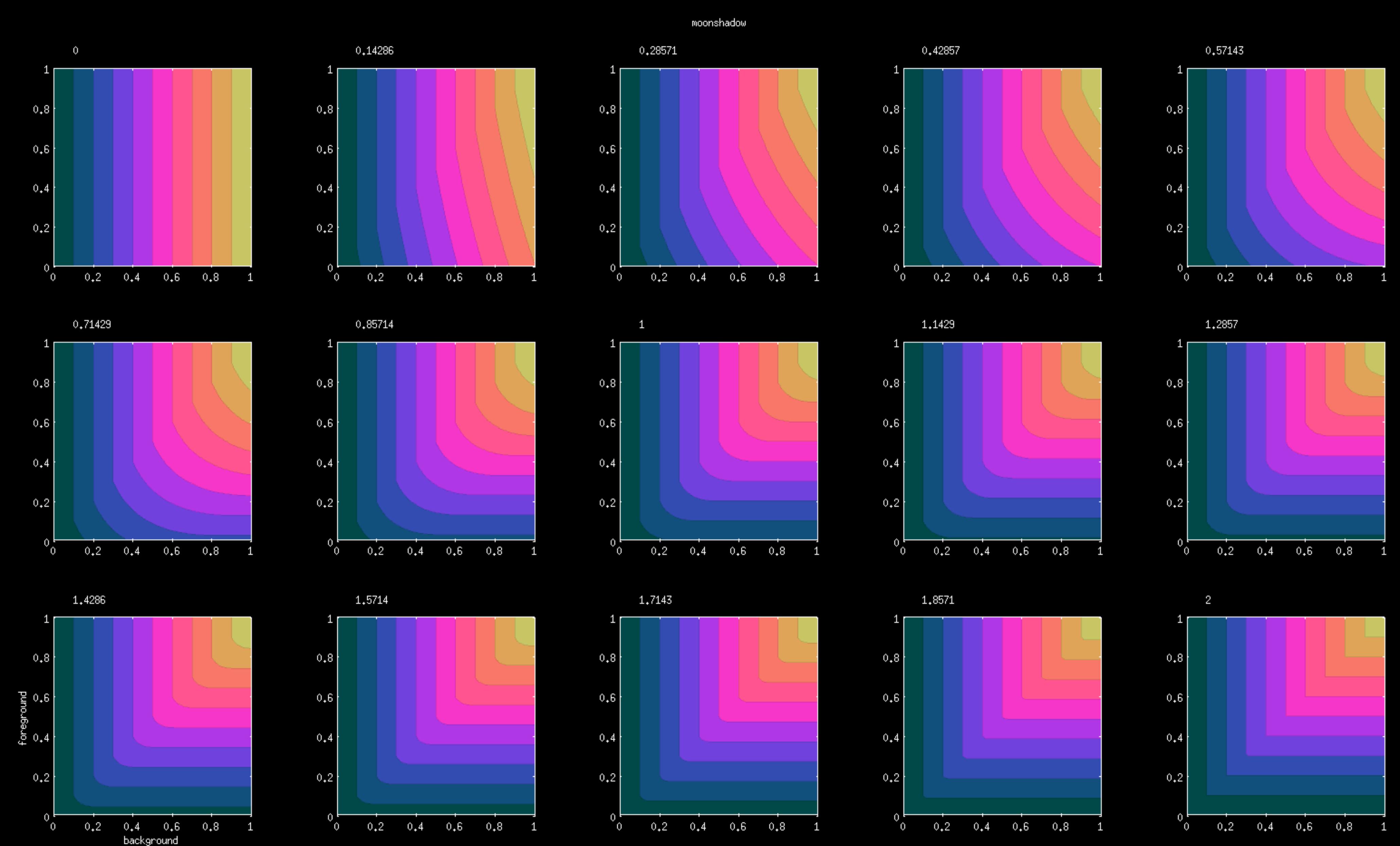




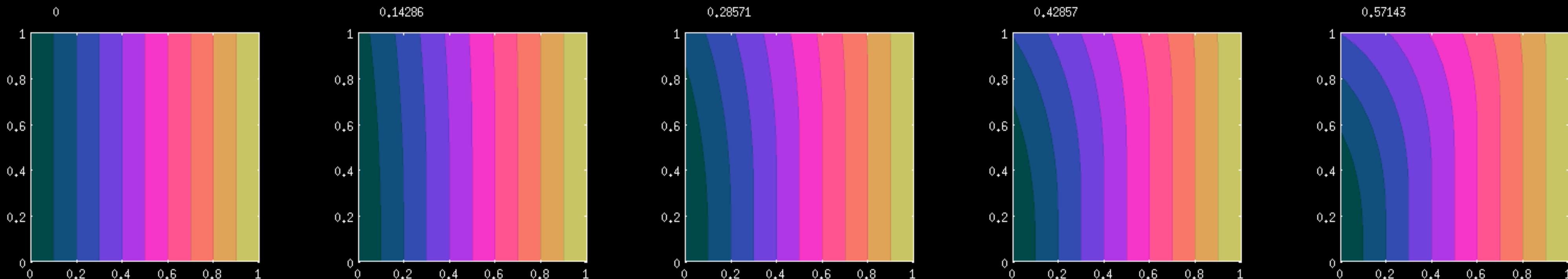




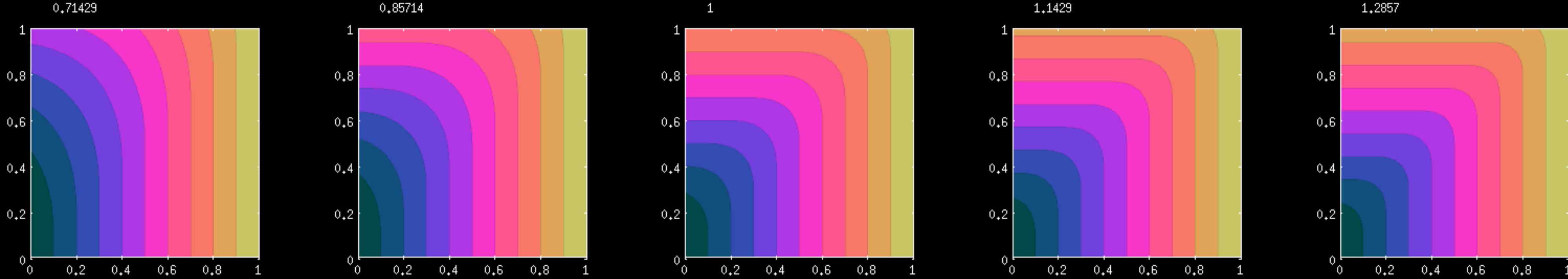




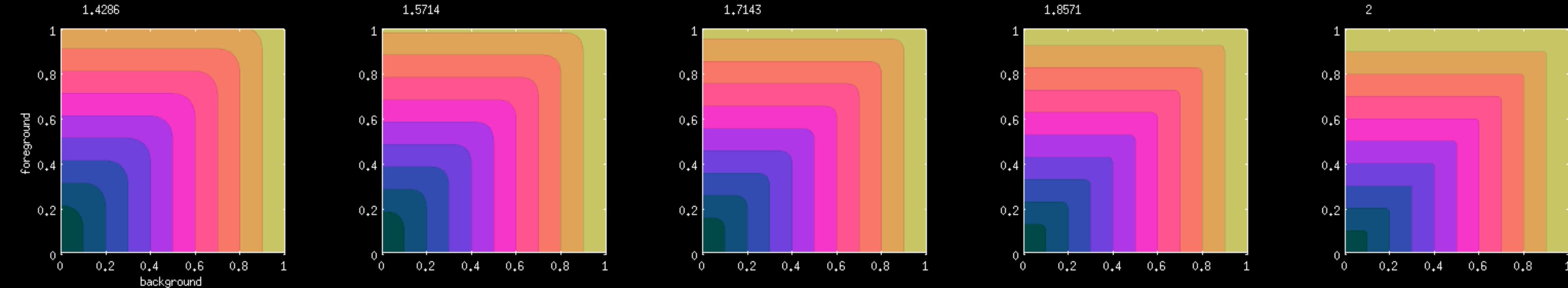
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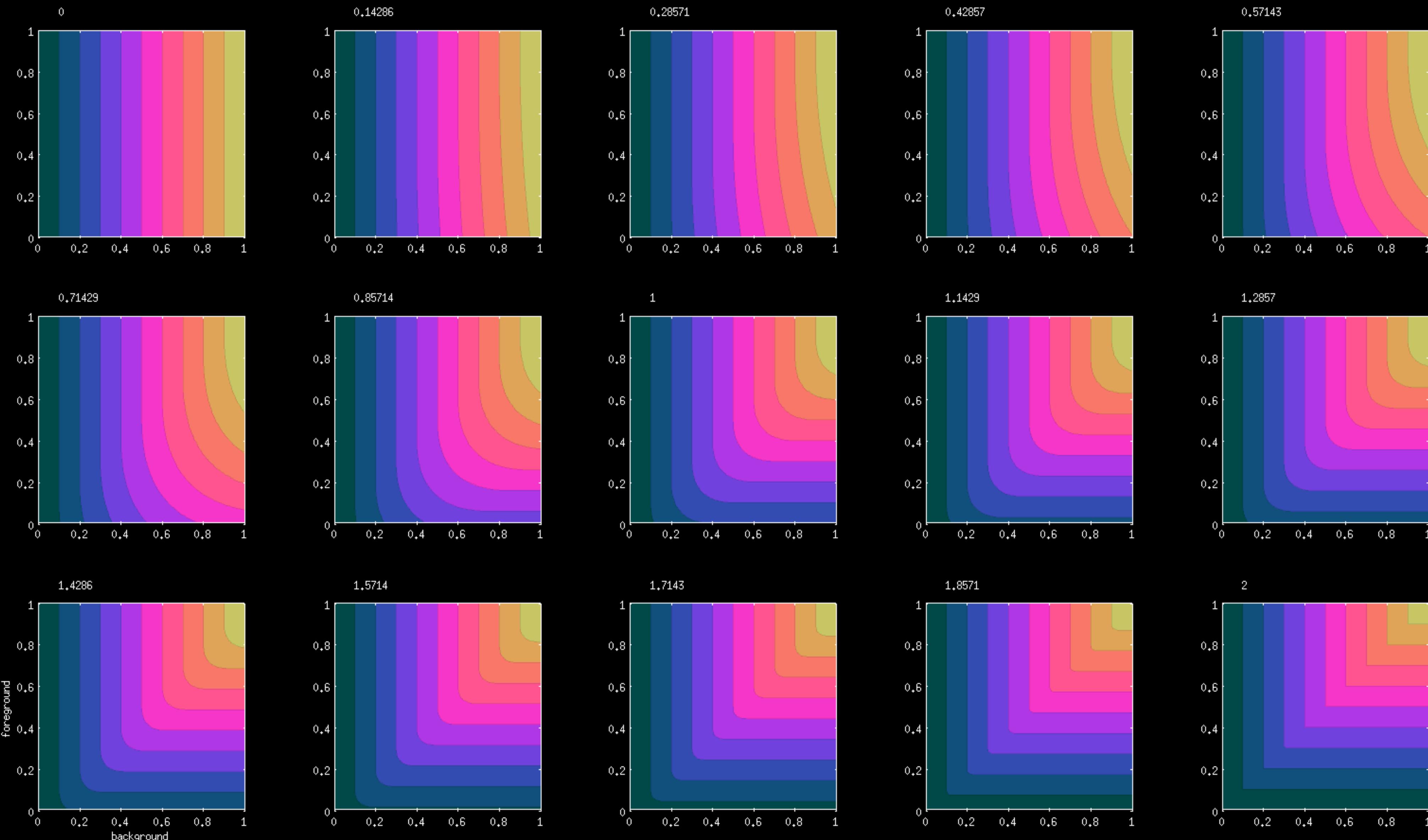
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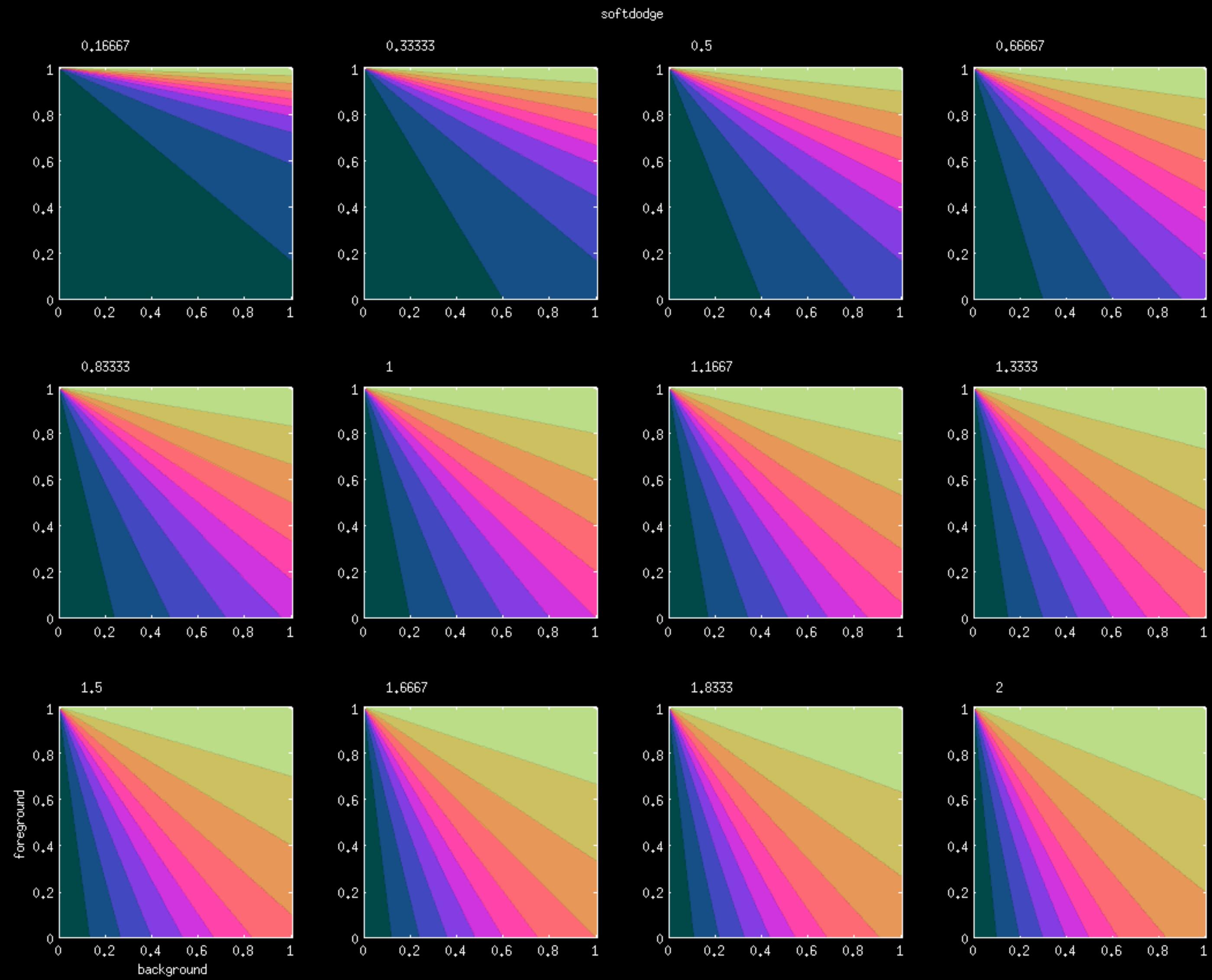


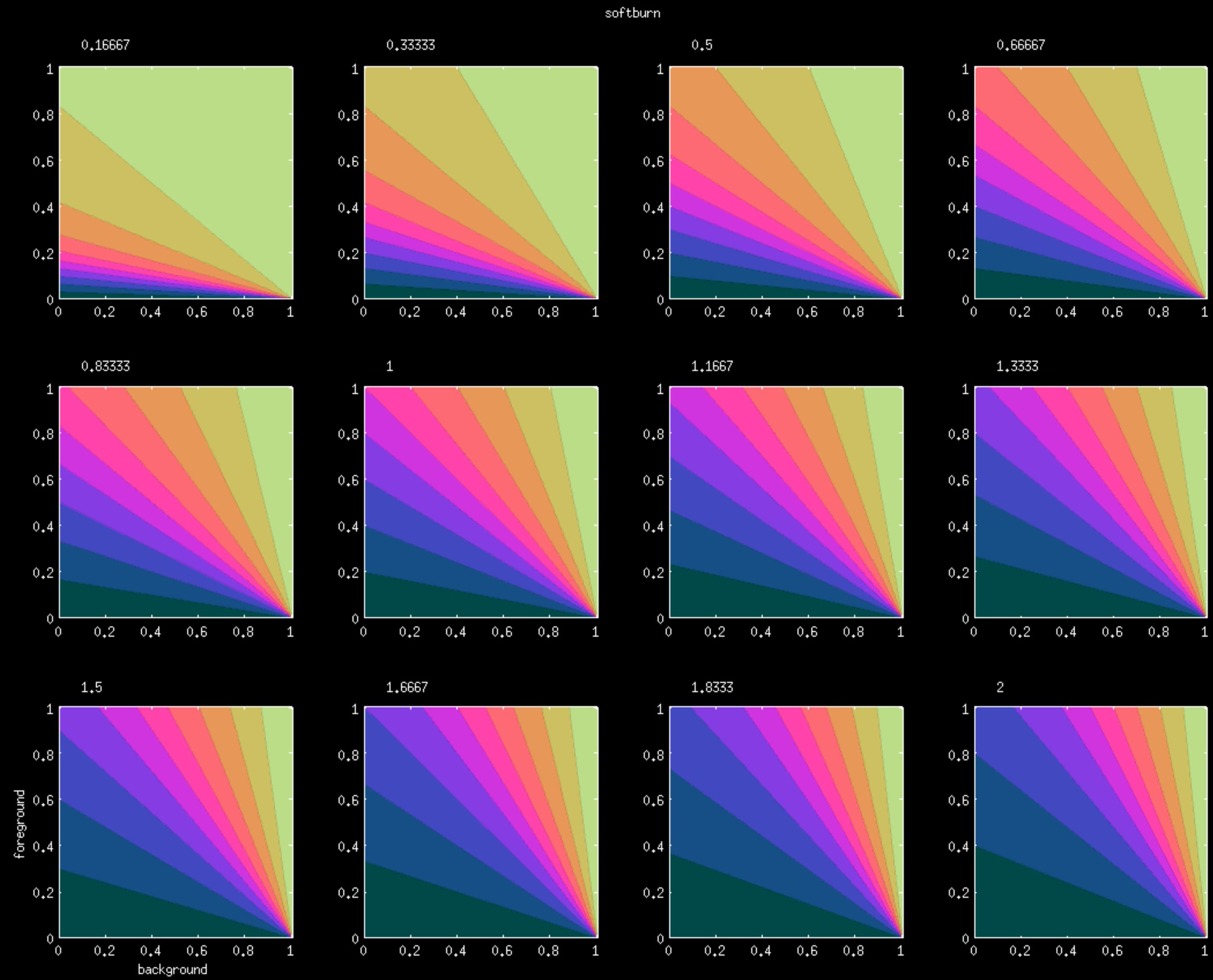
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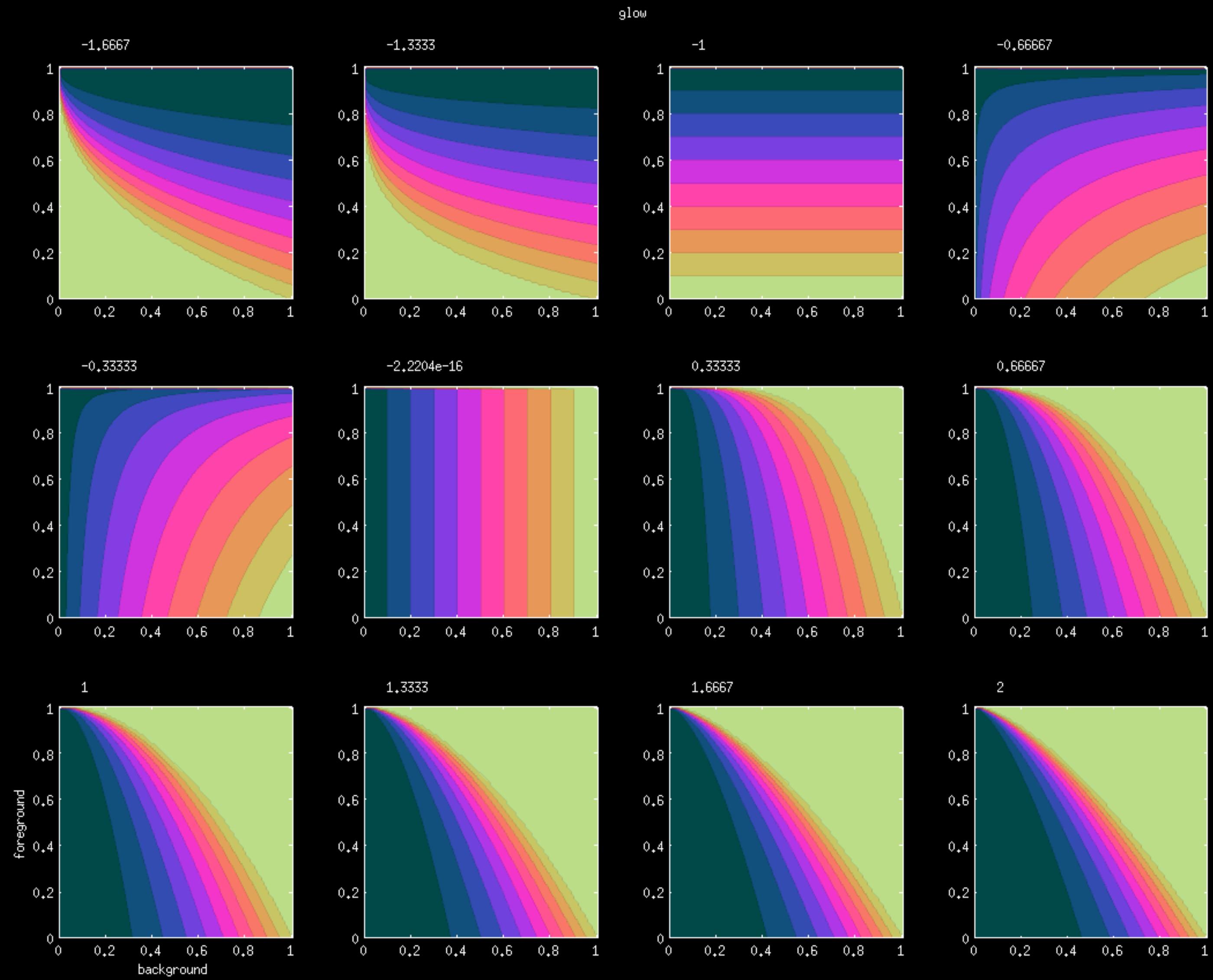


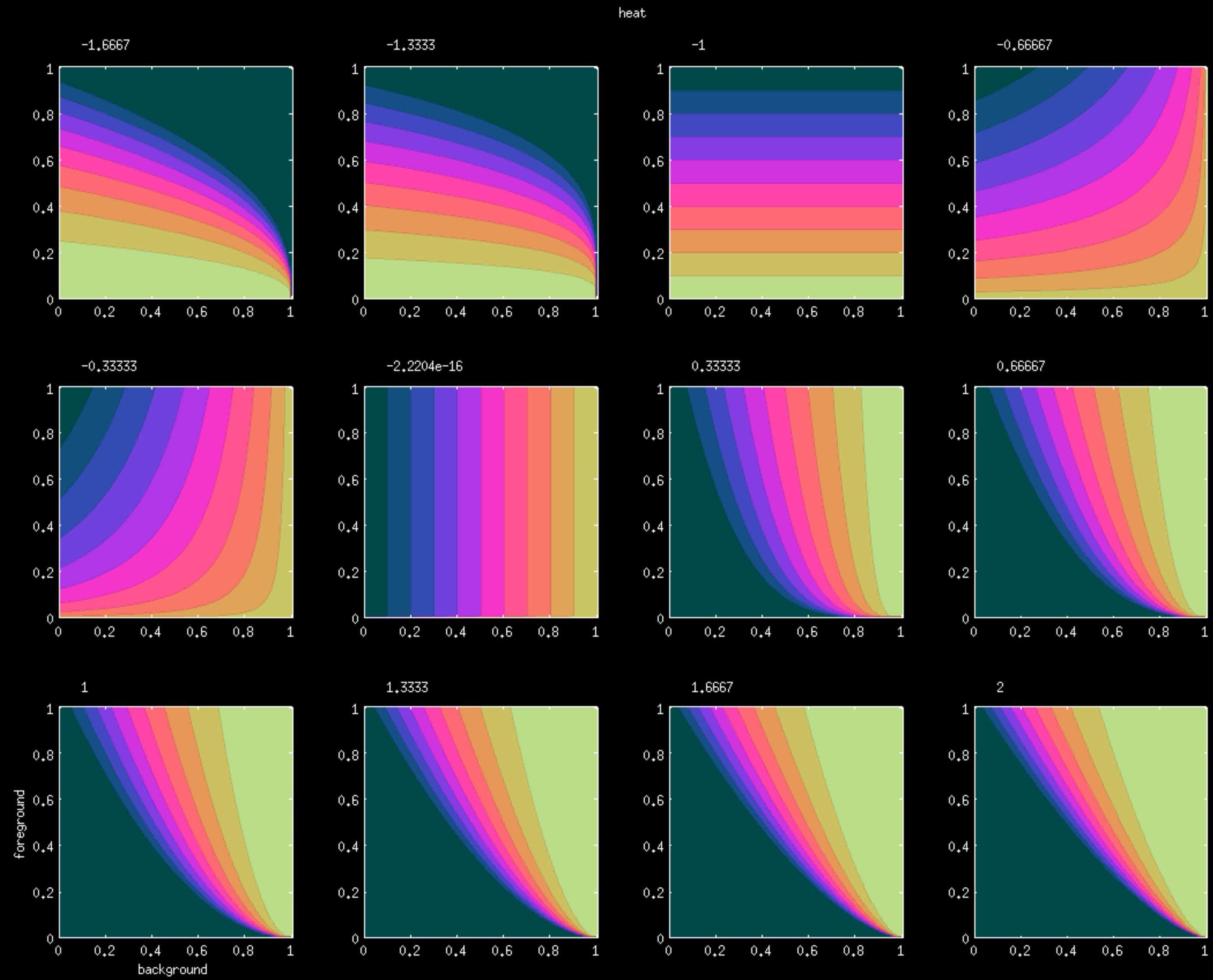
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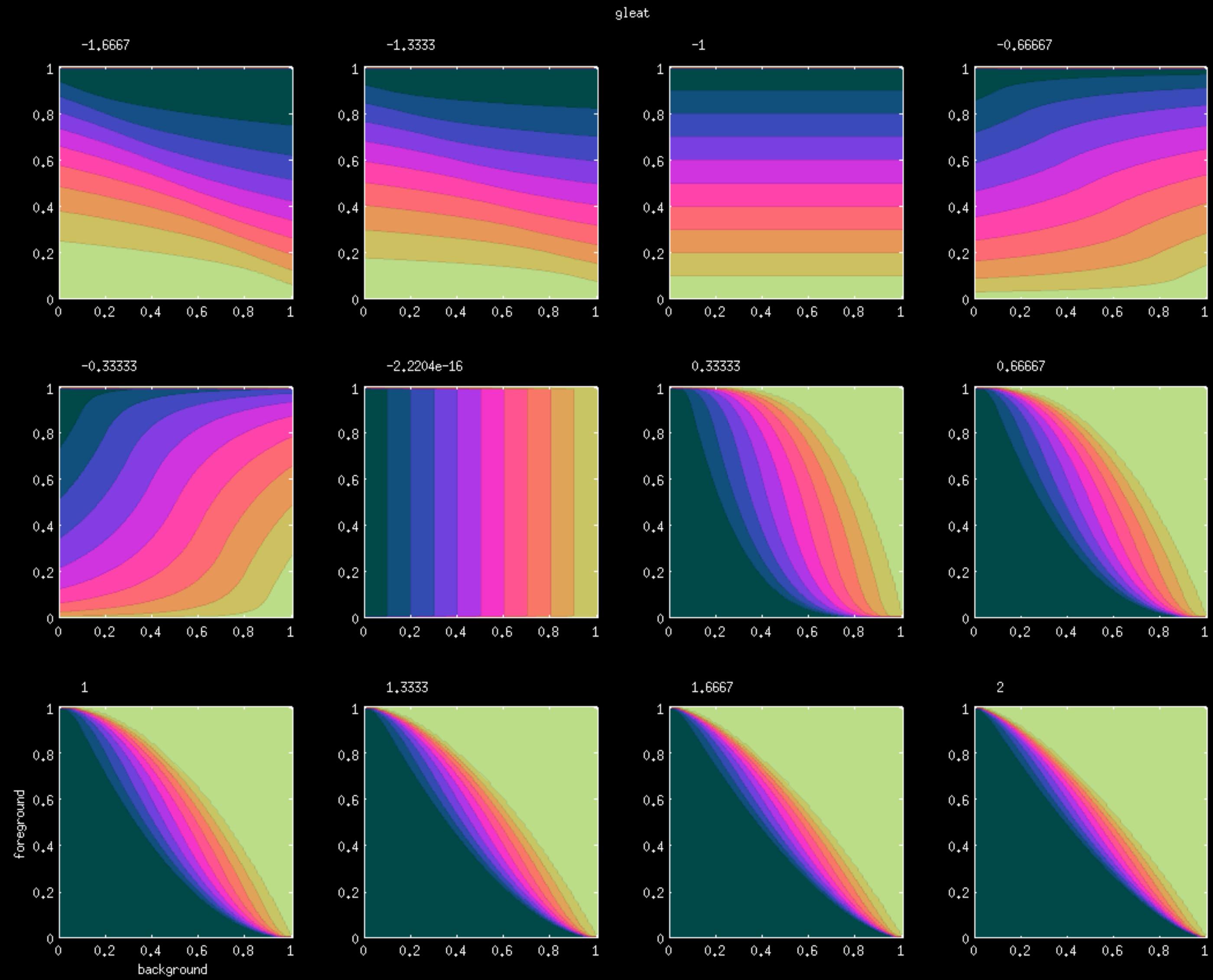


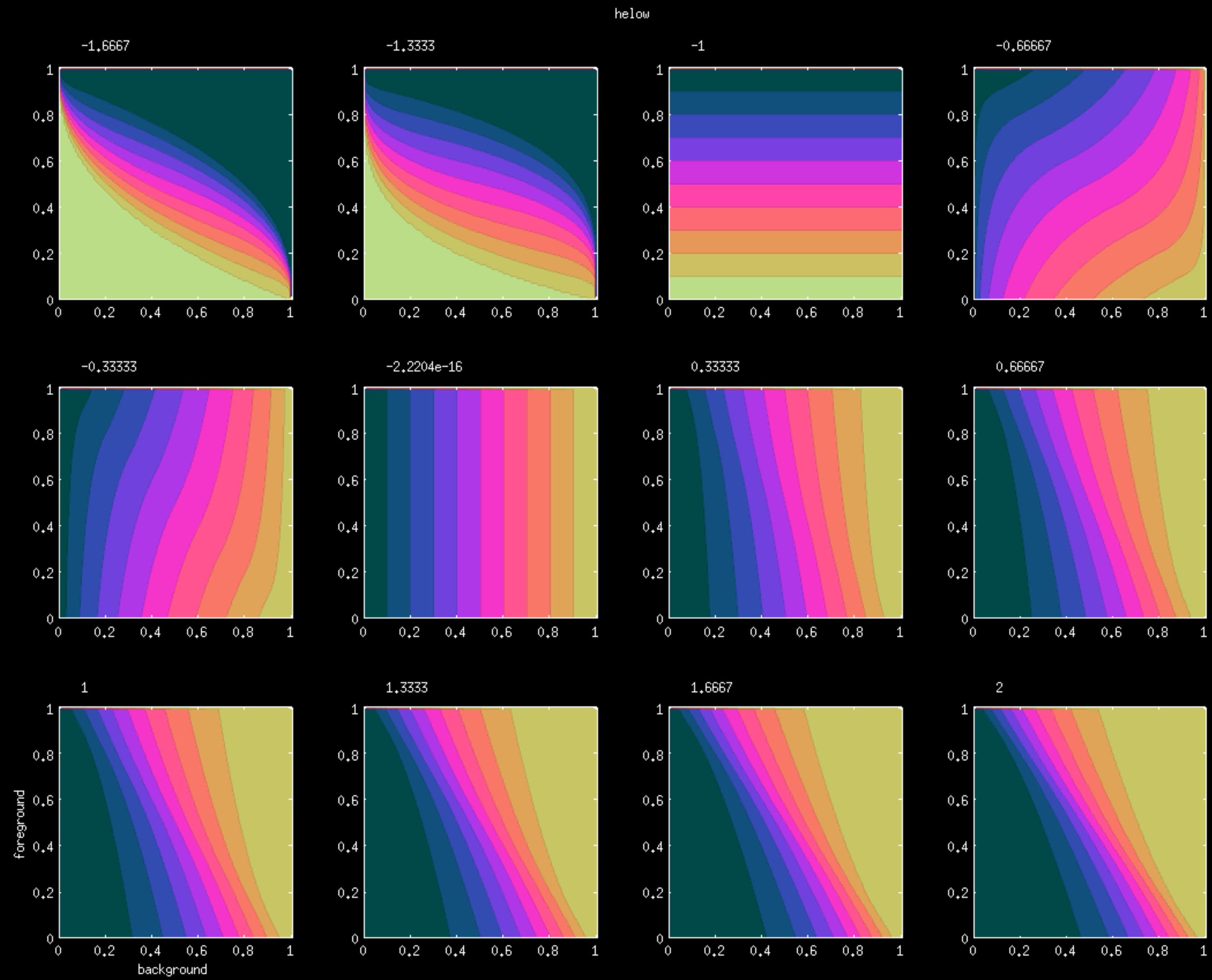


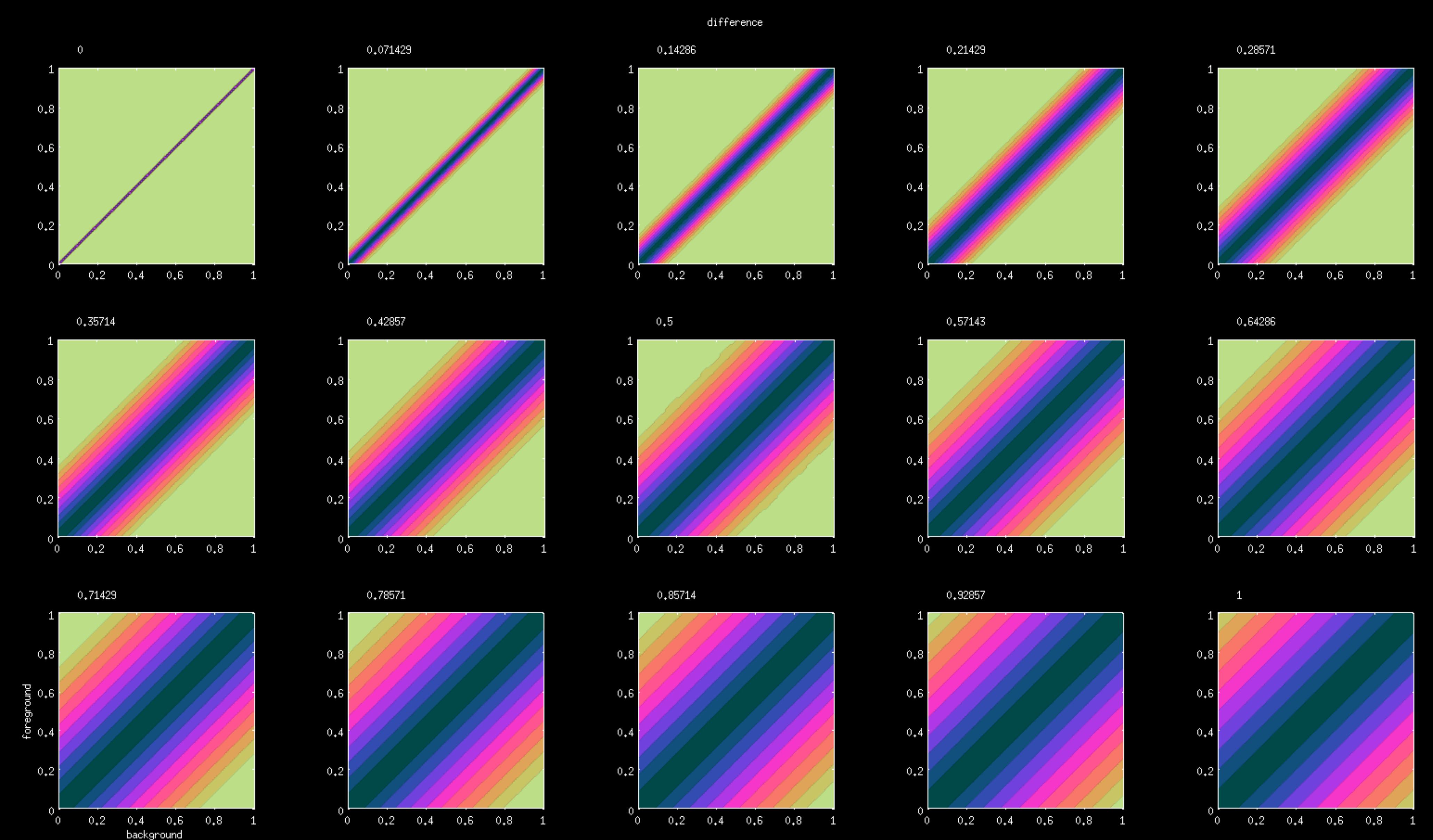


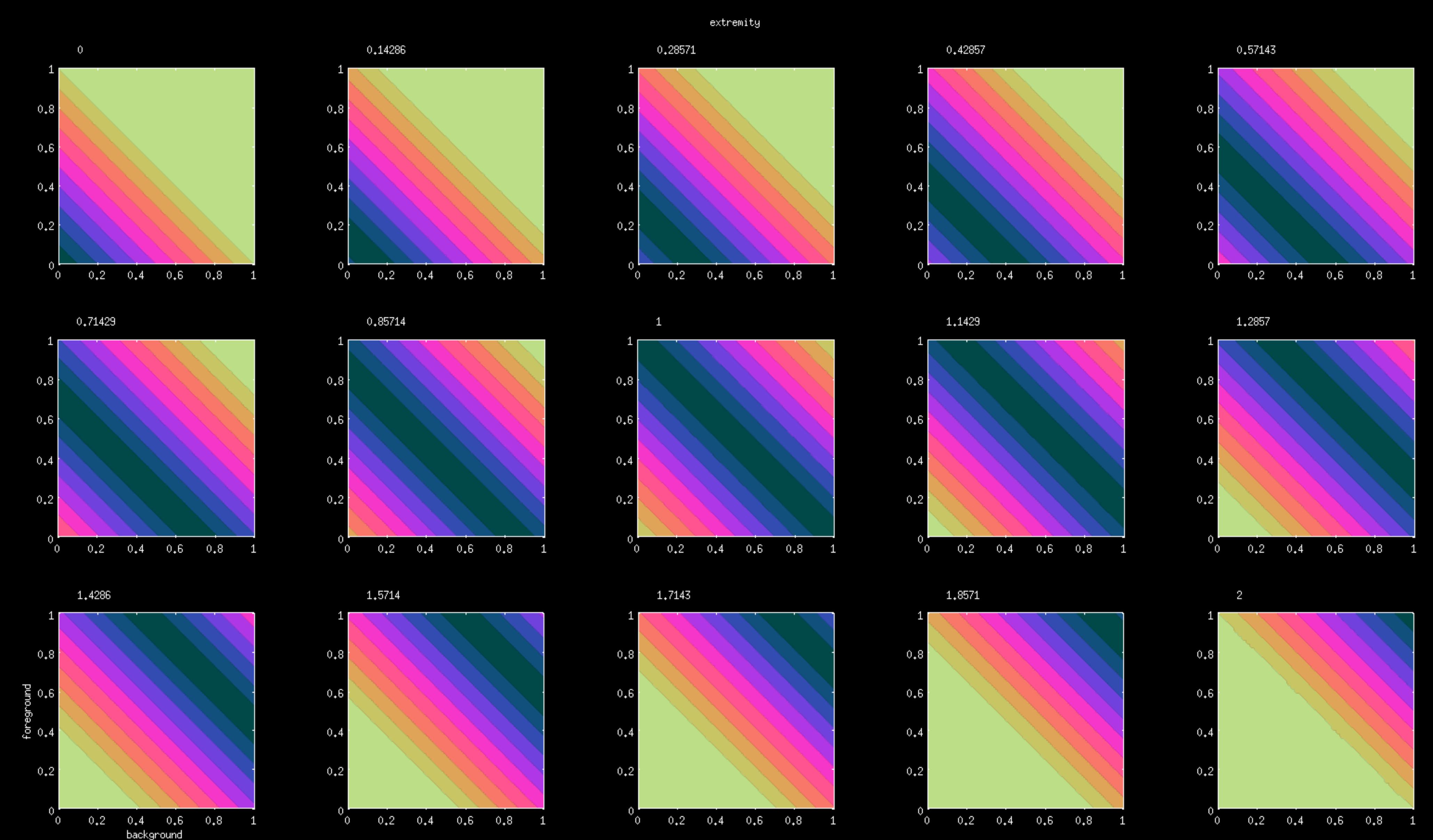


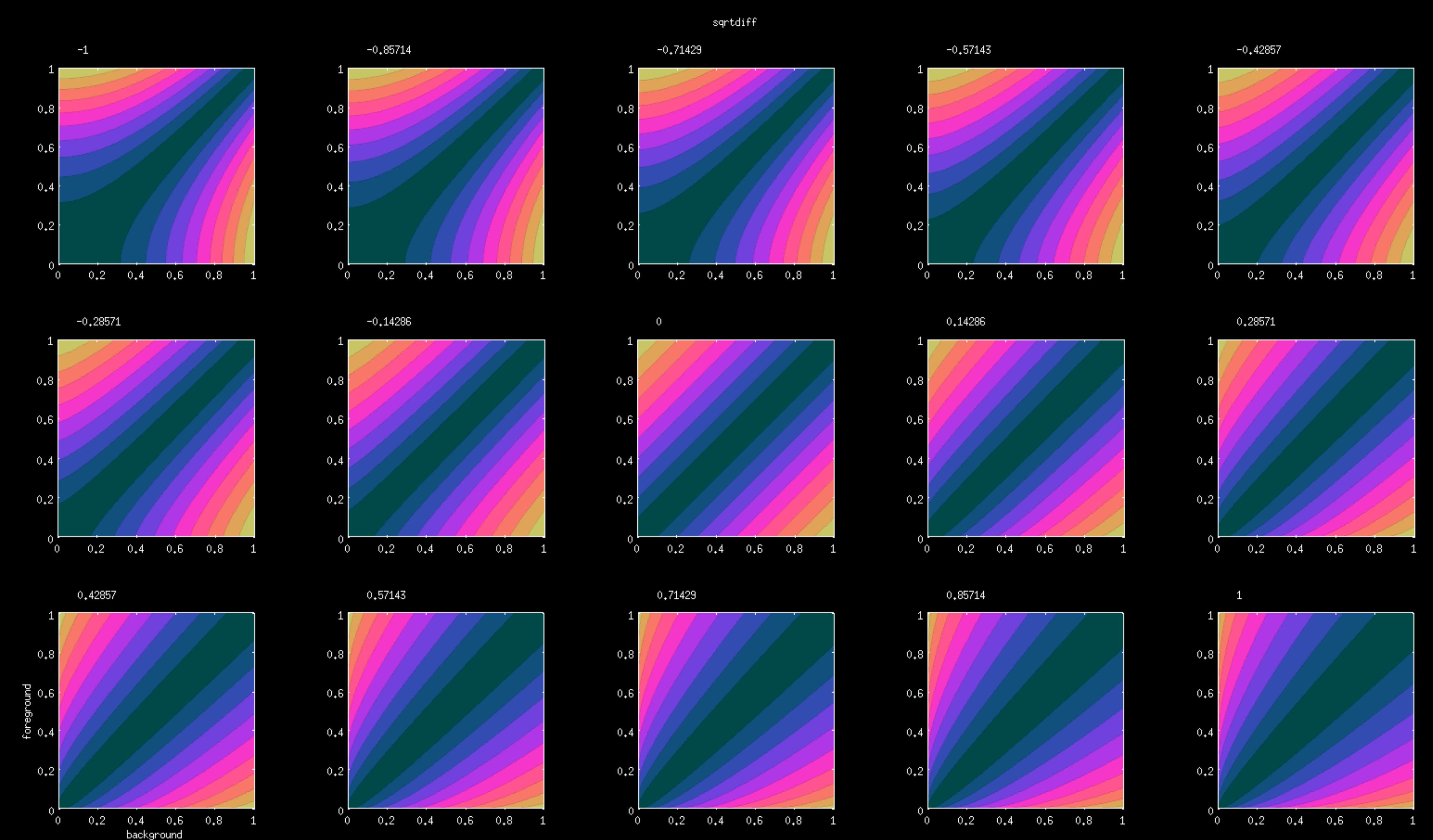


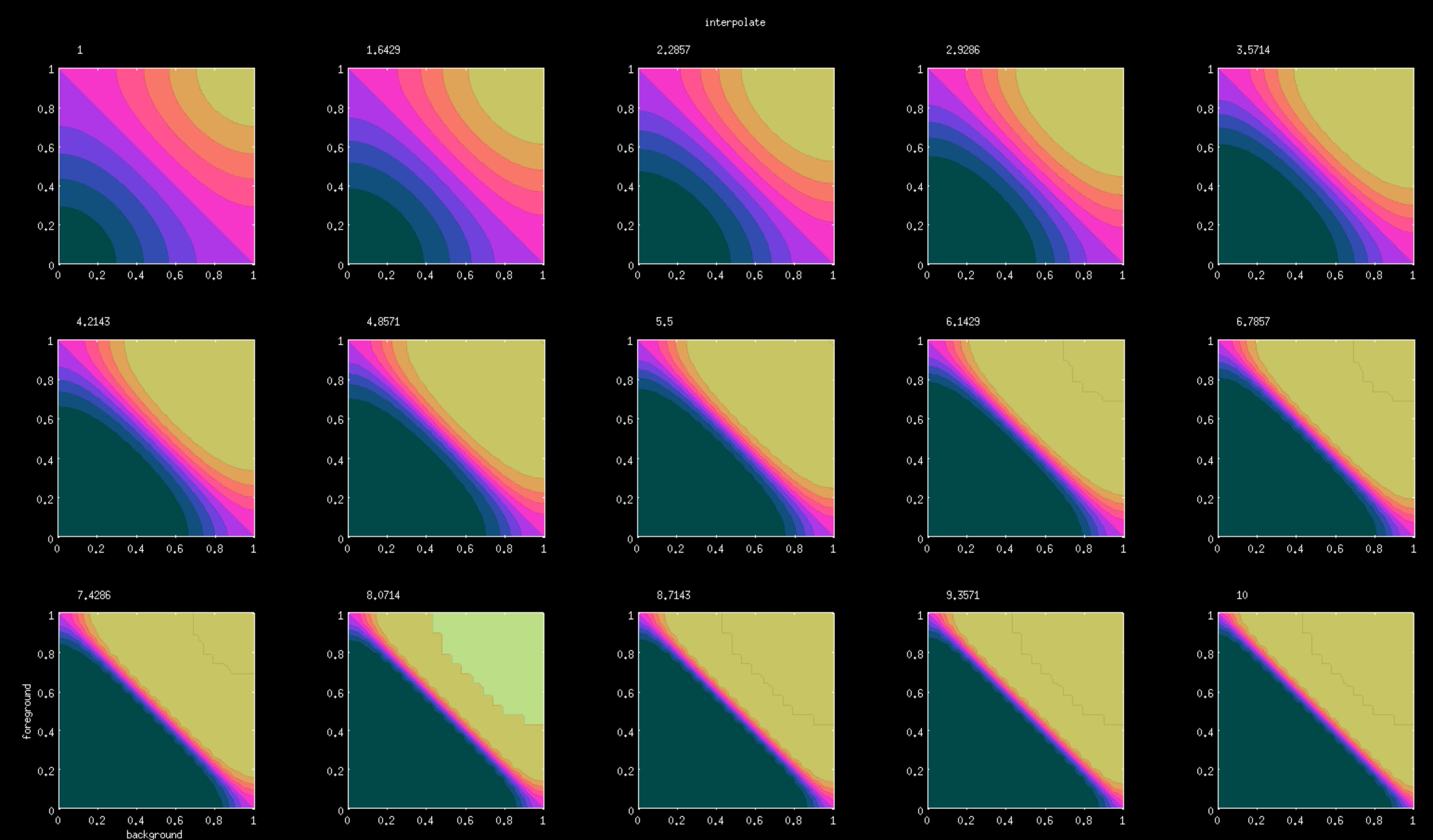


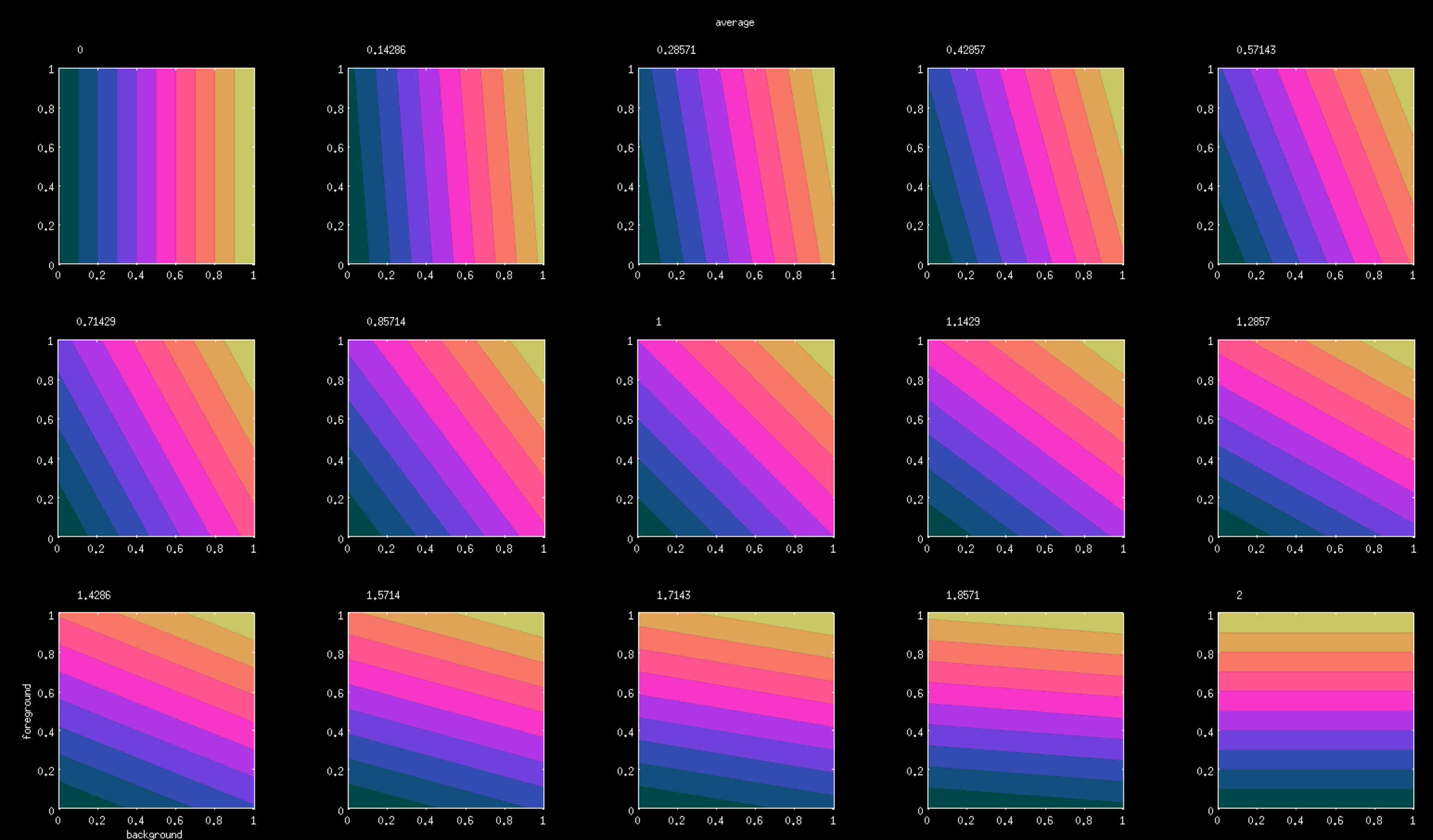


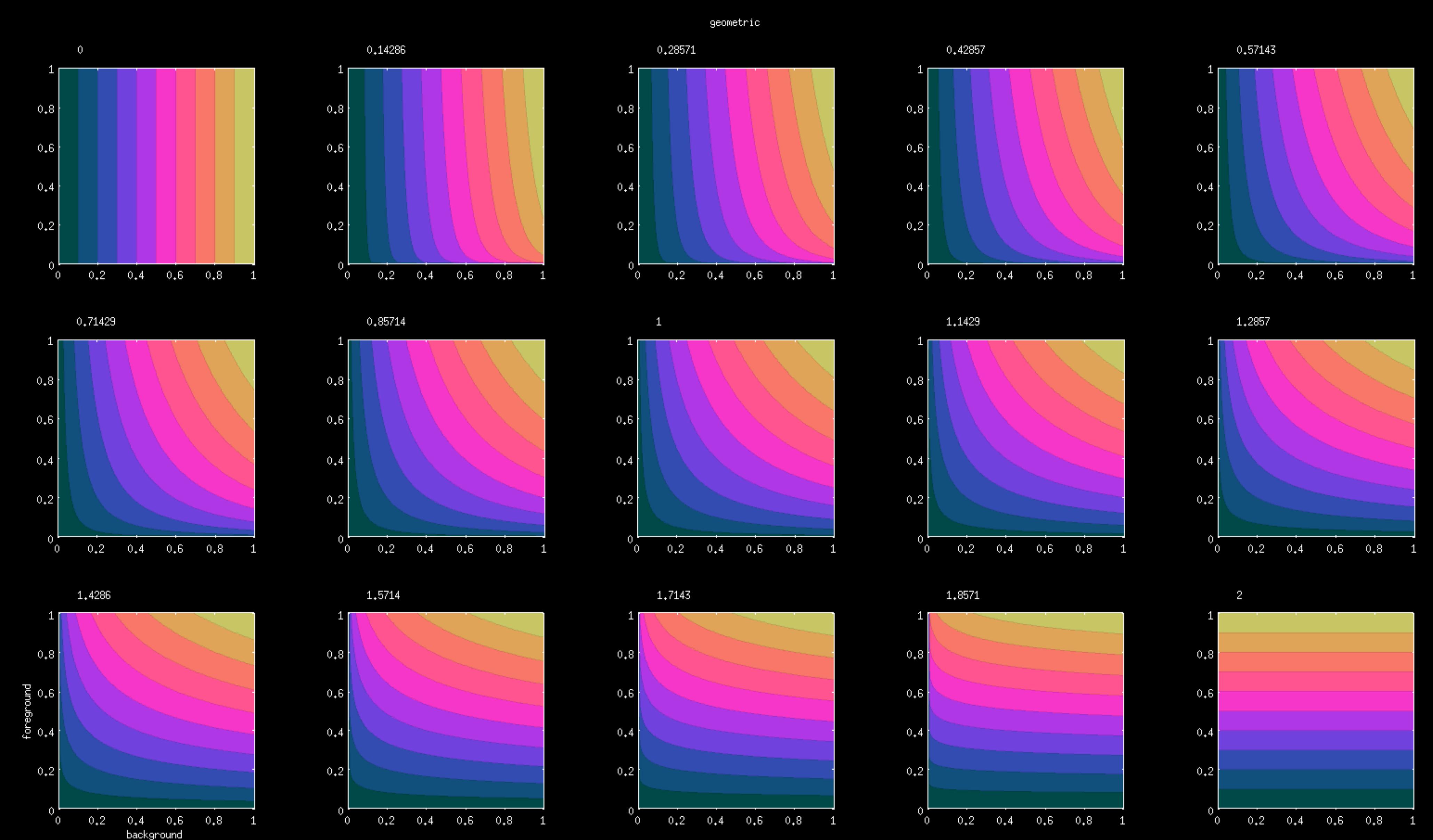


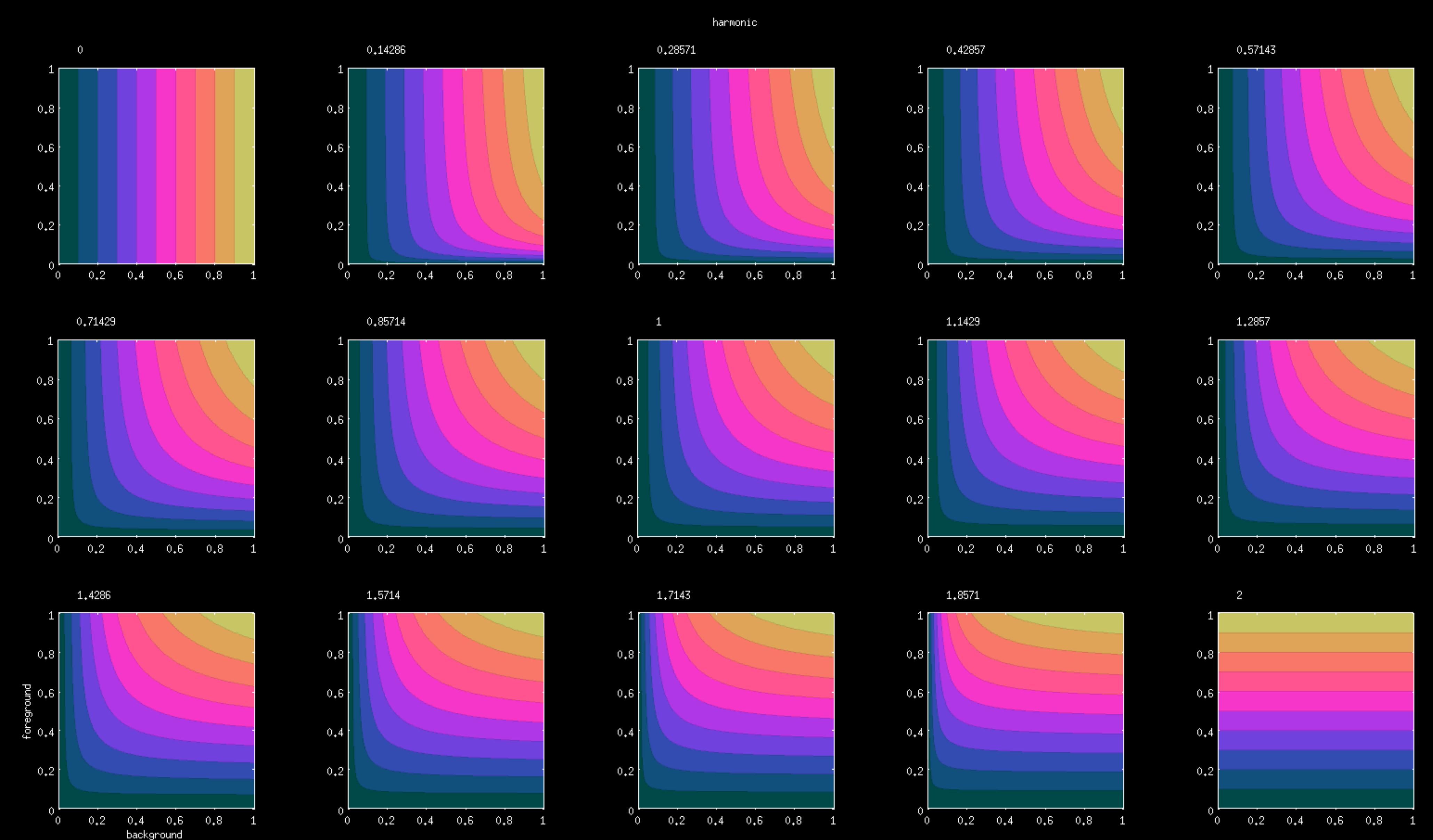


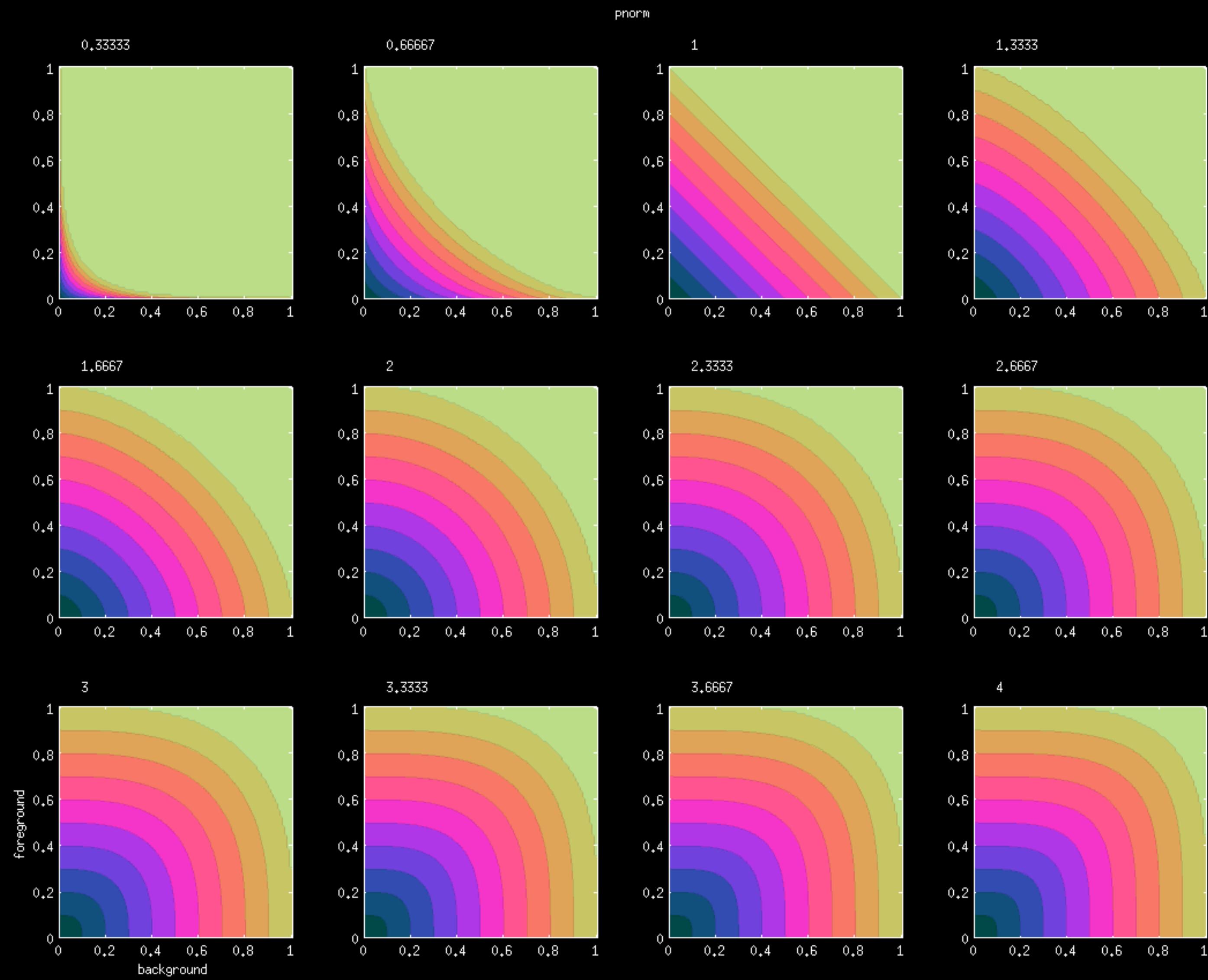




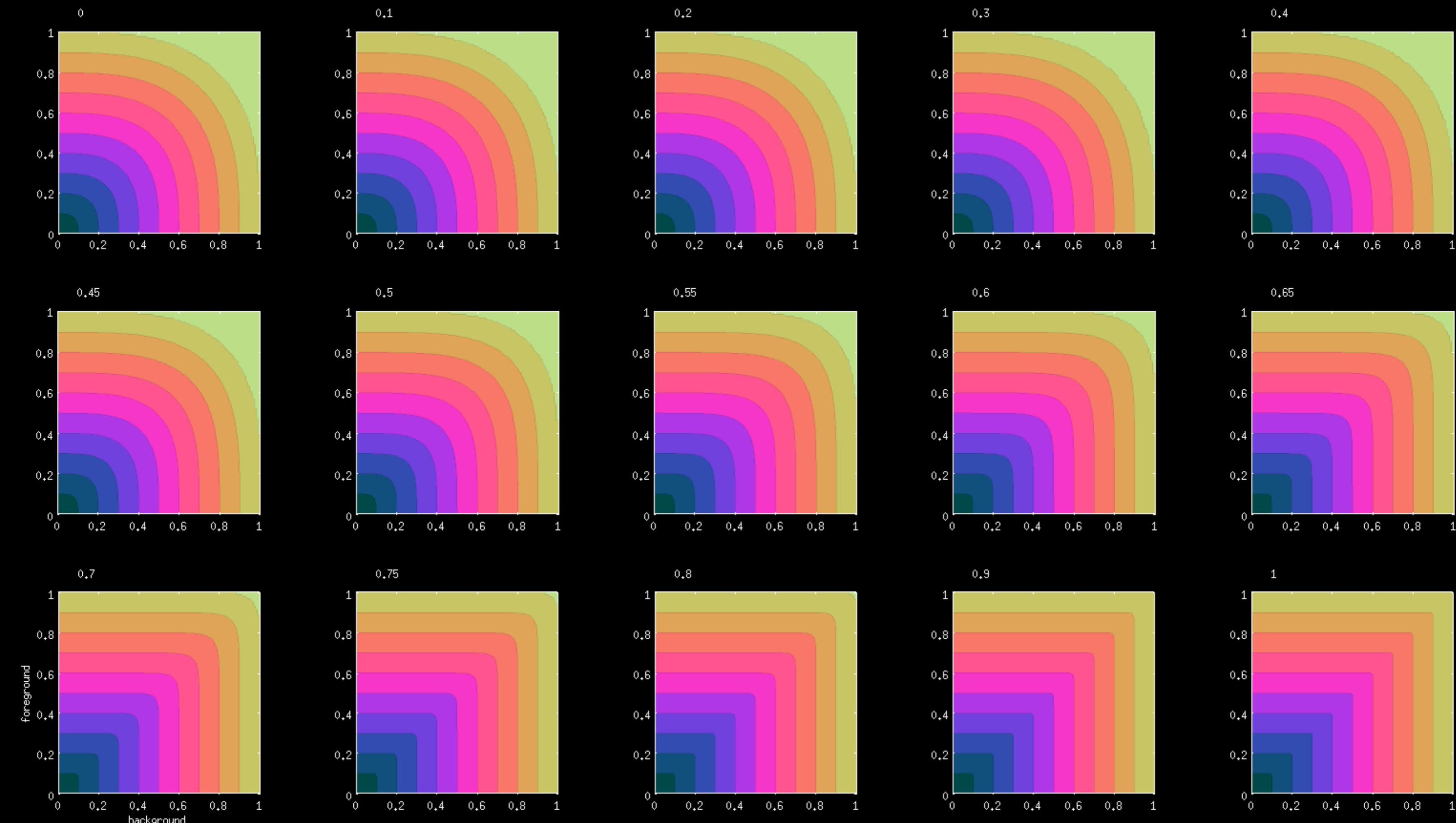




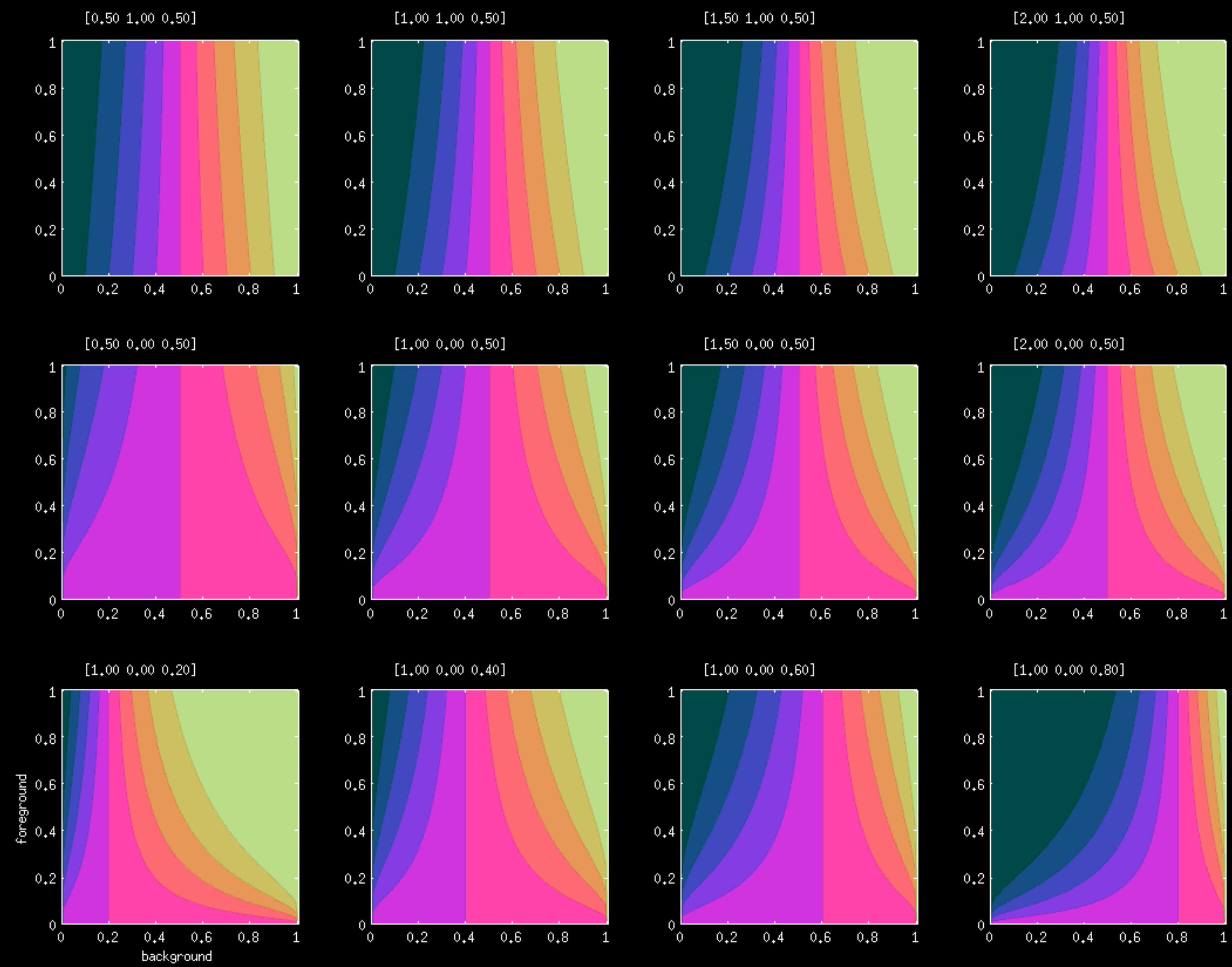




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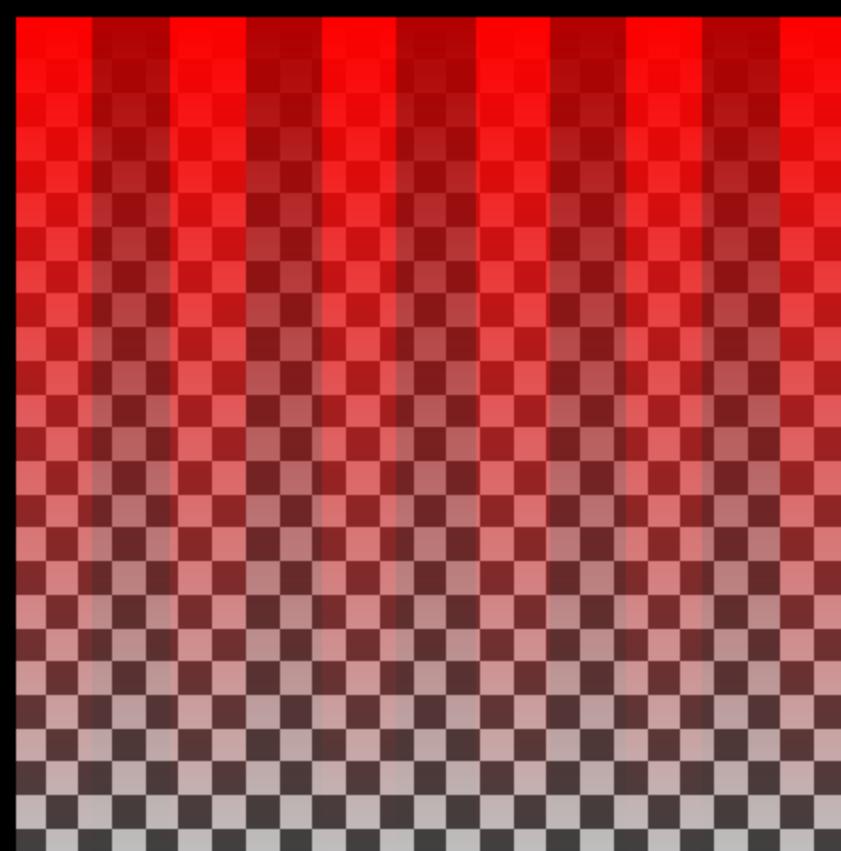


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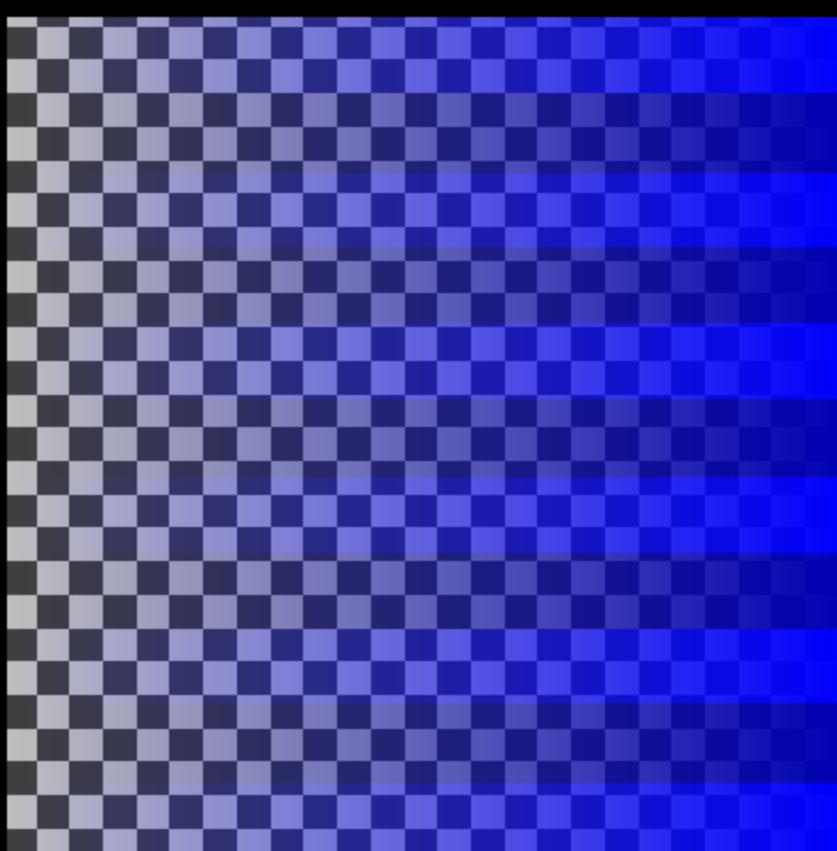


COMPOSITION MODE EXAMPLES ('normal' blend mode)

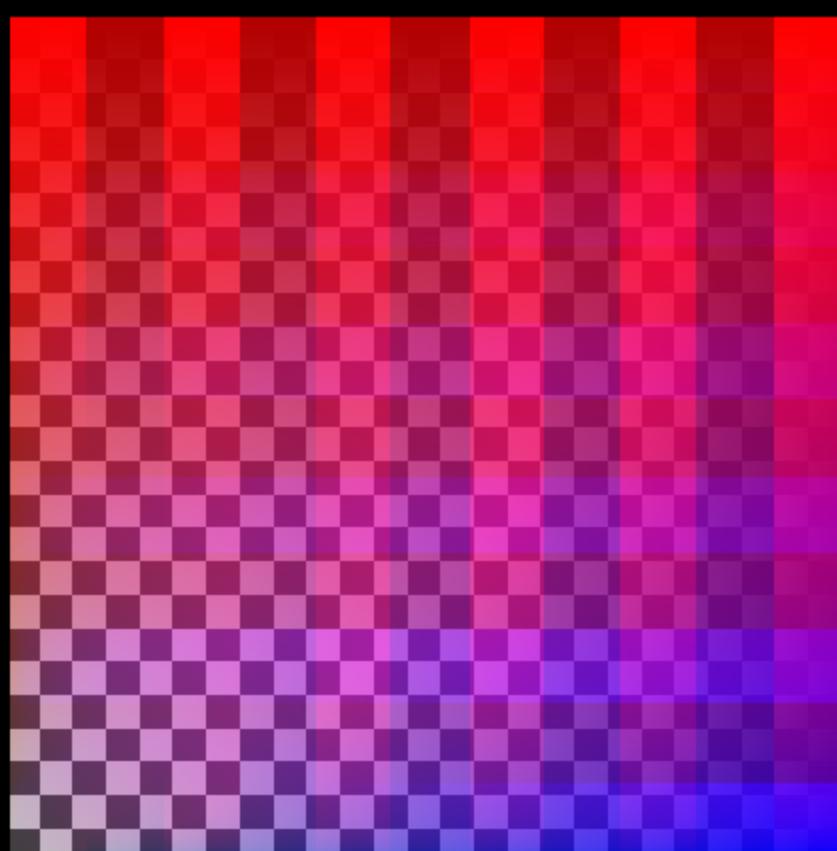
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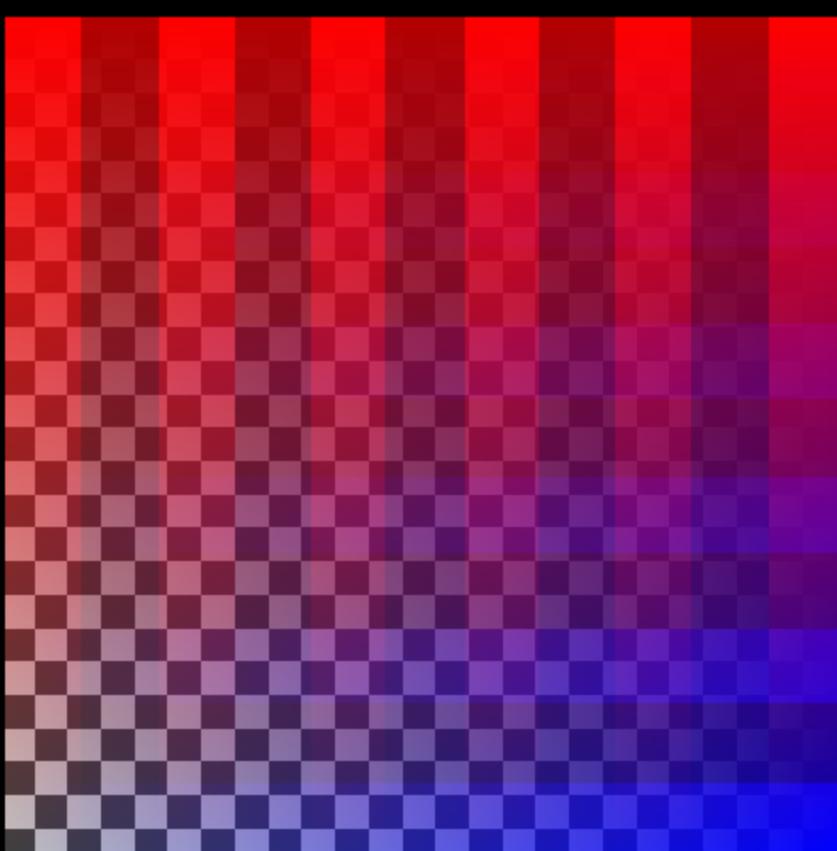
BG



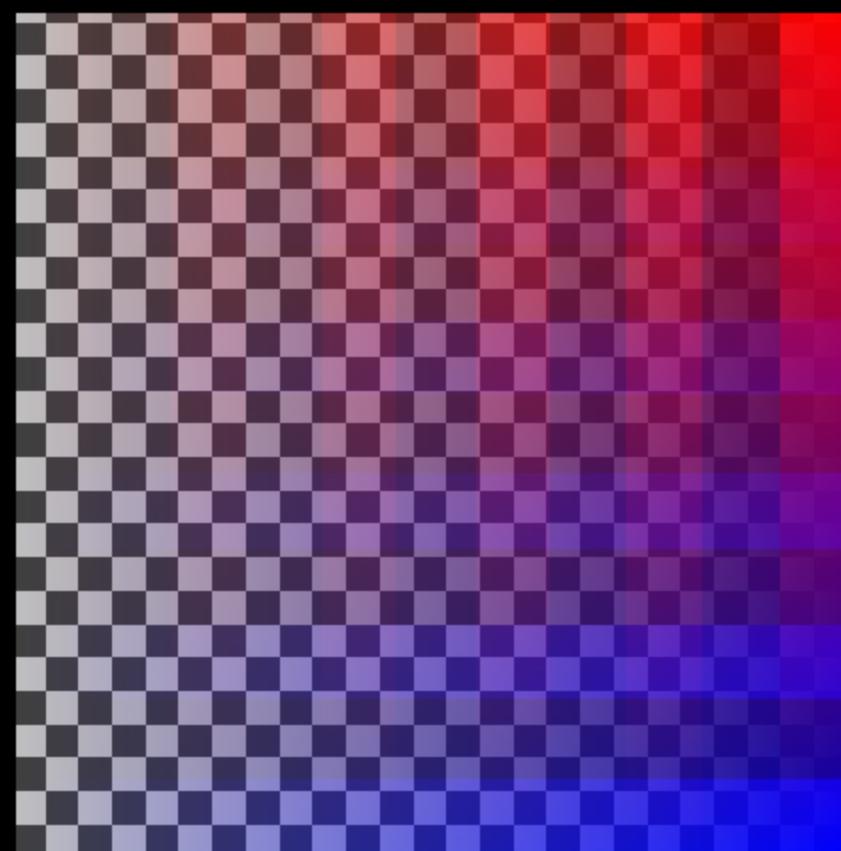
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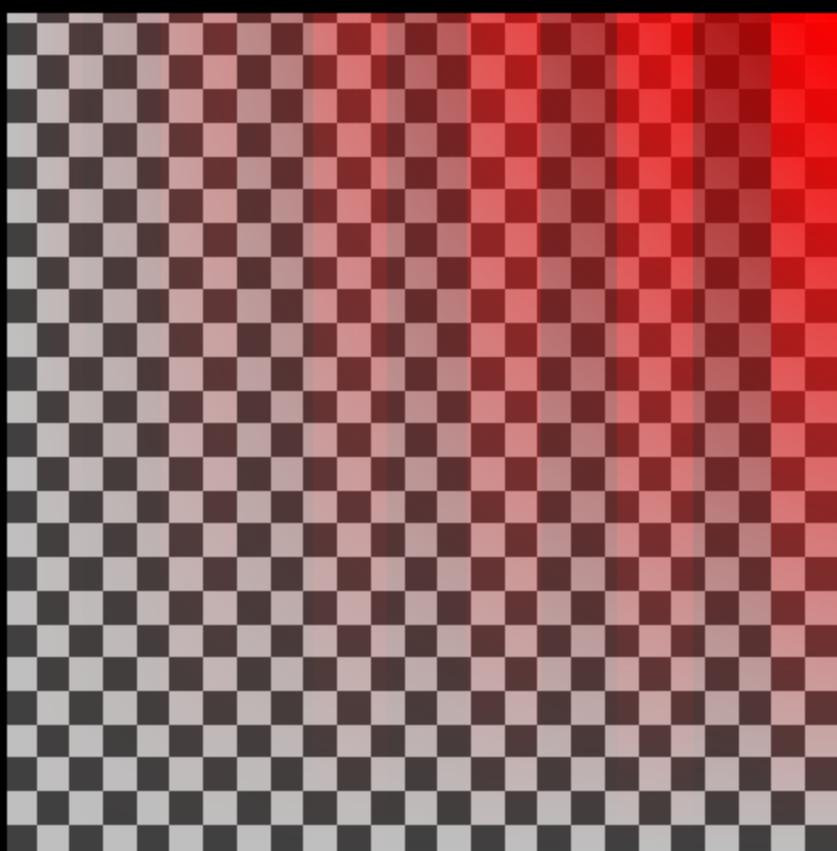
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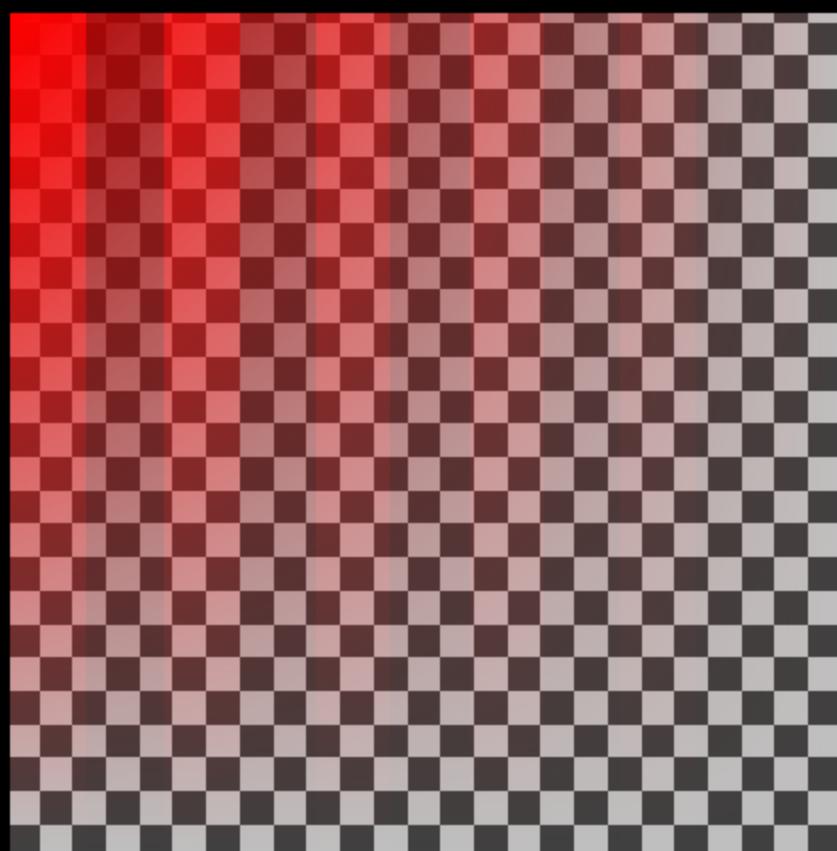
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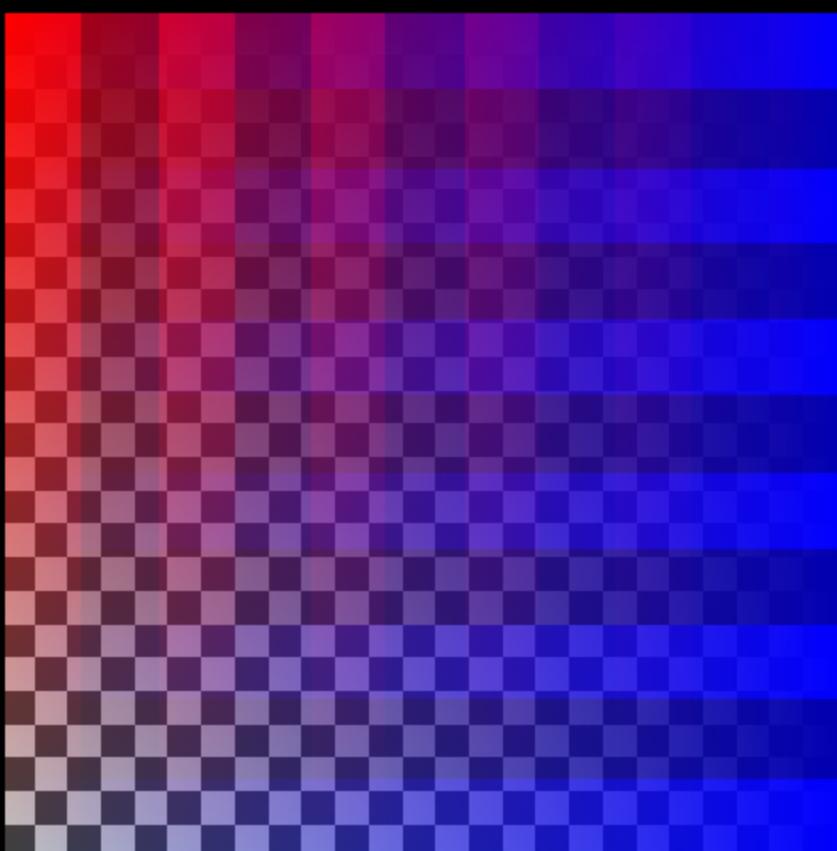
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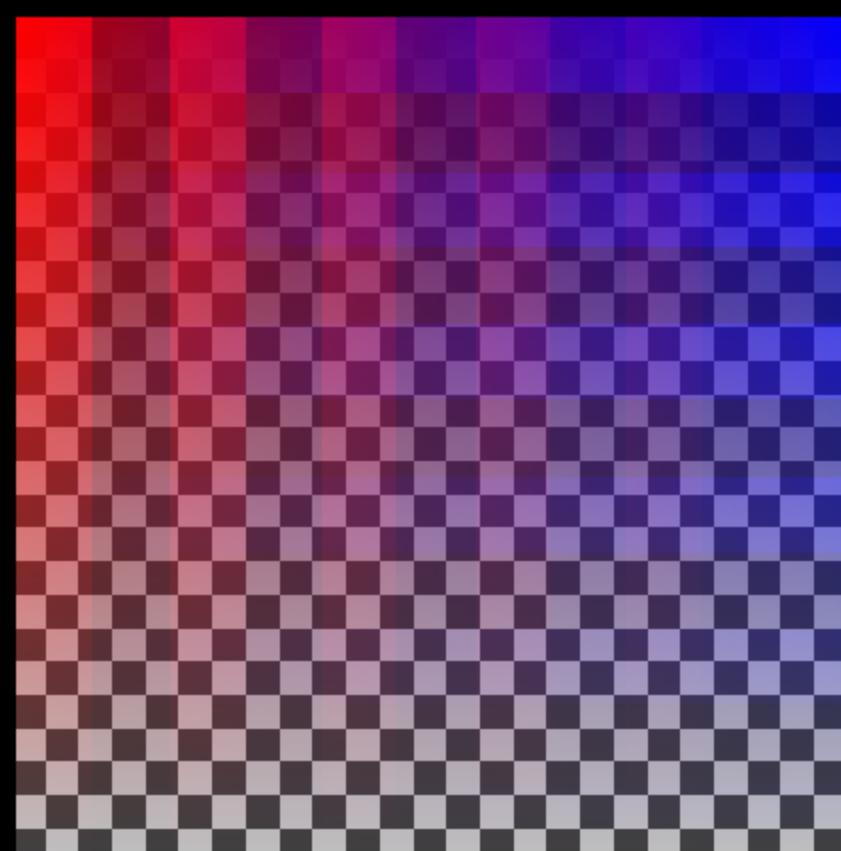
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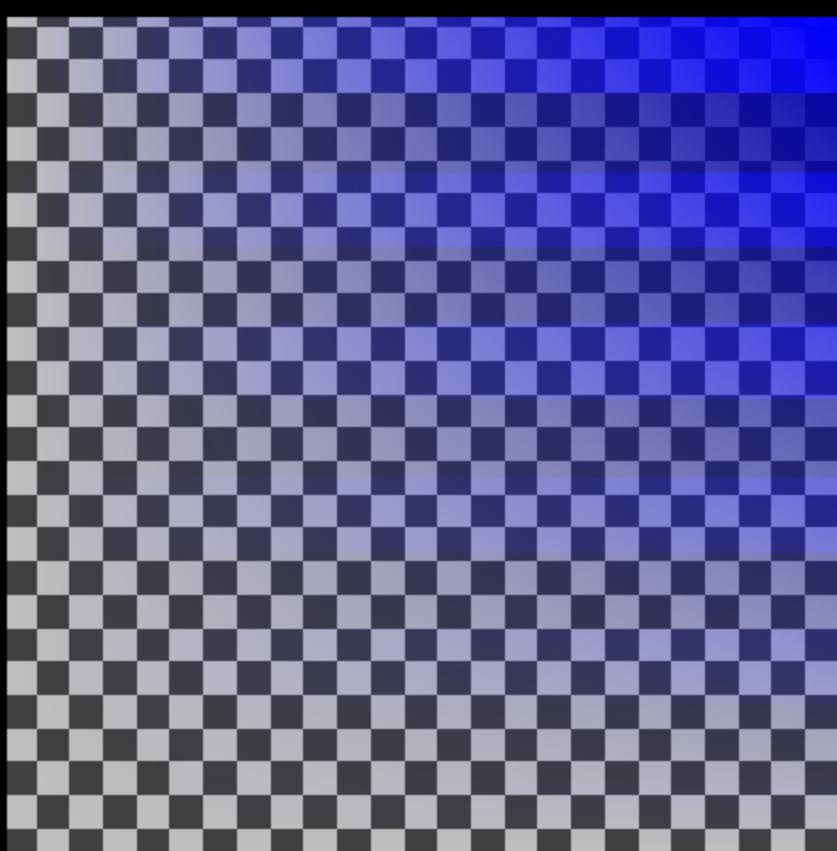
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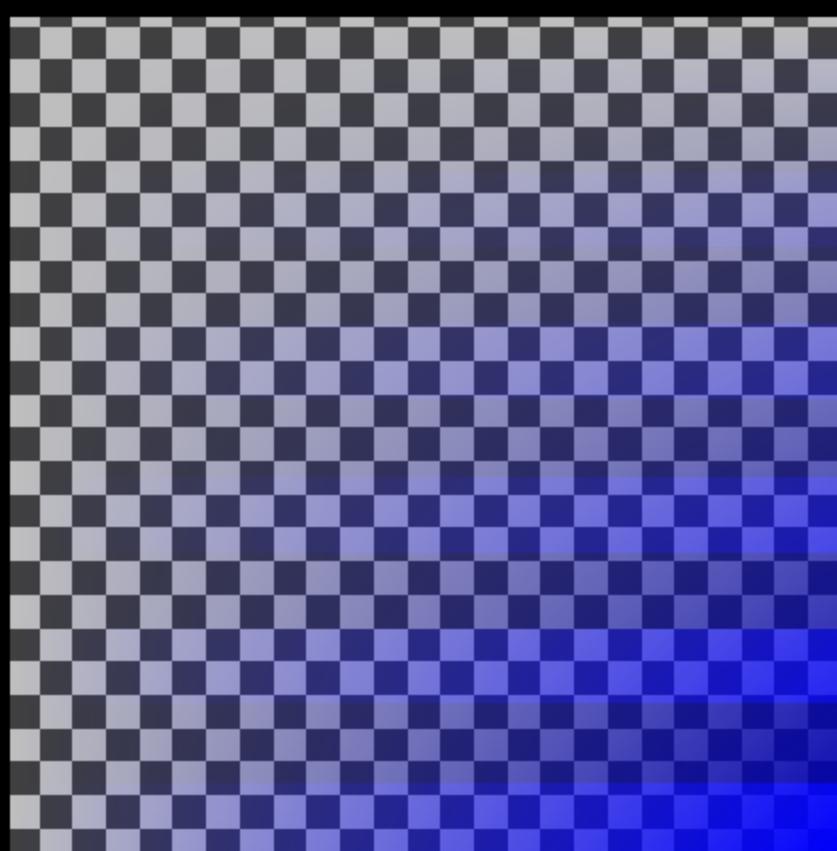
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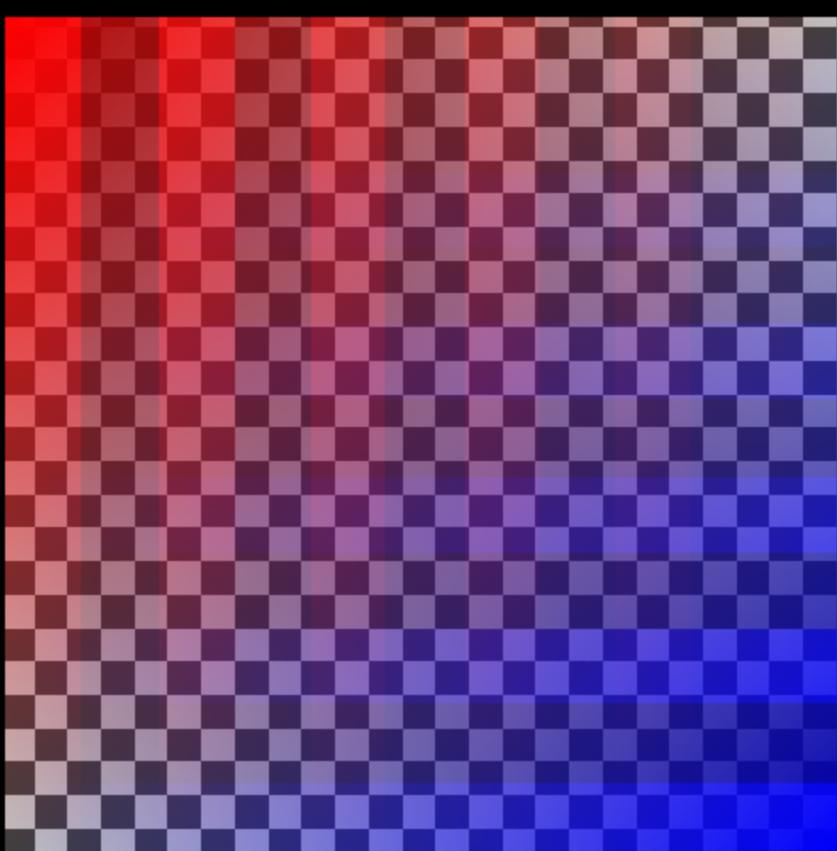
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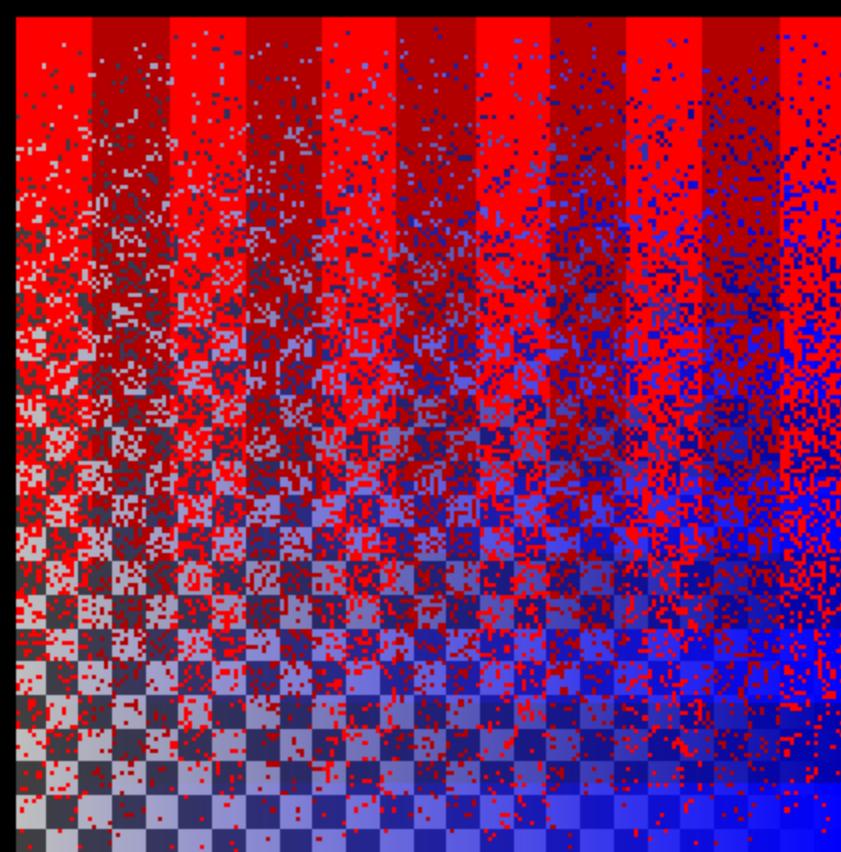
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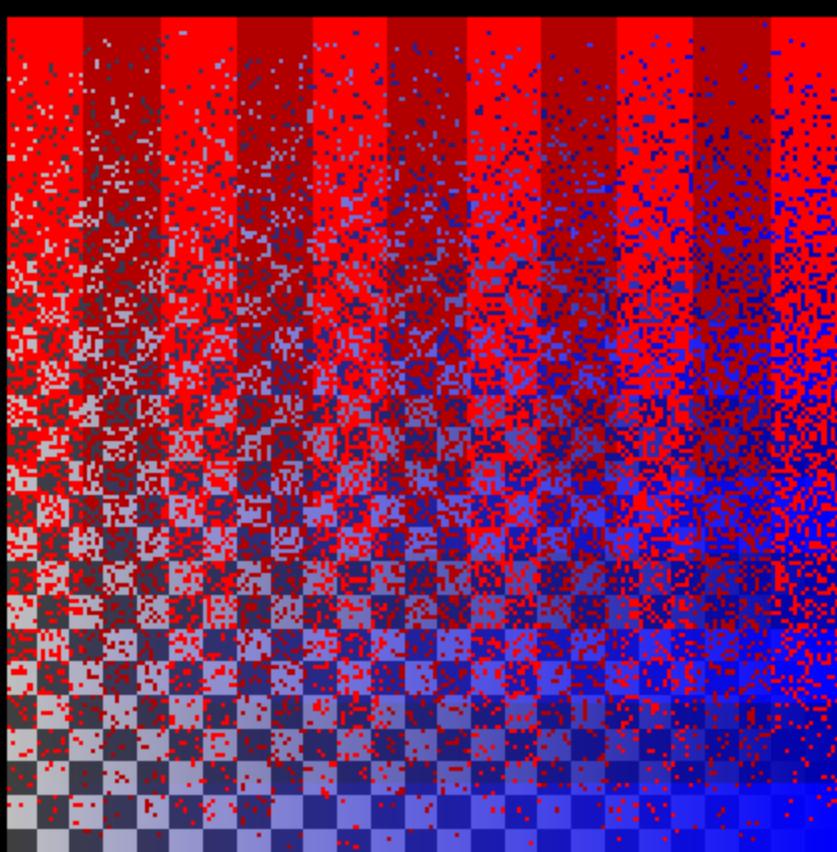
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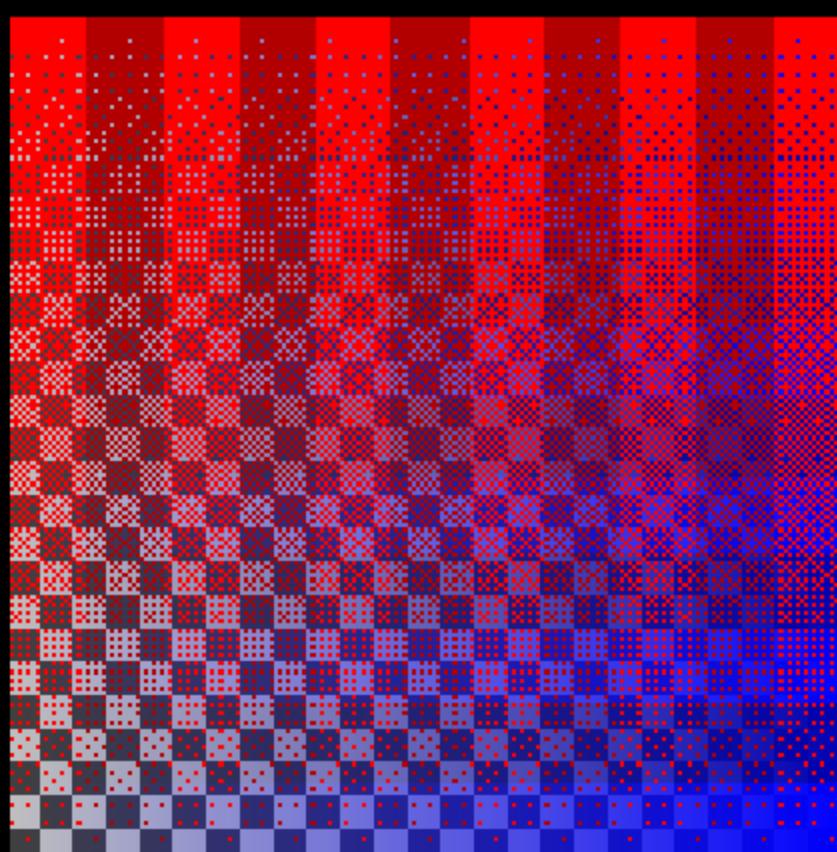
dissolve



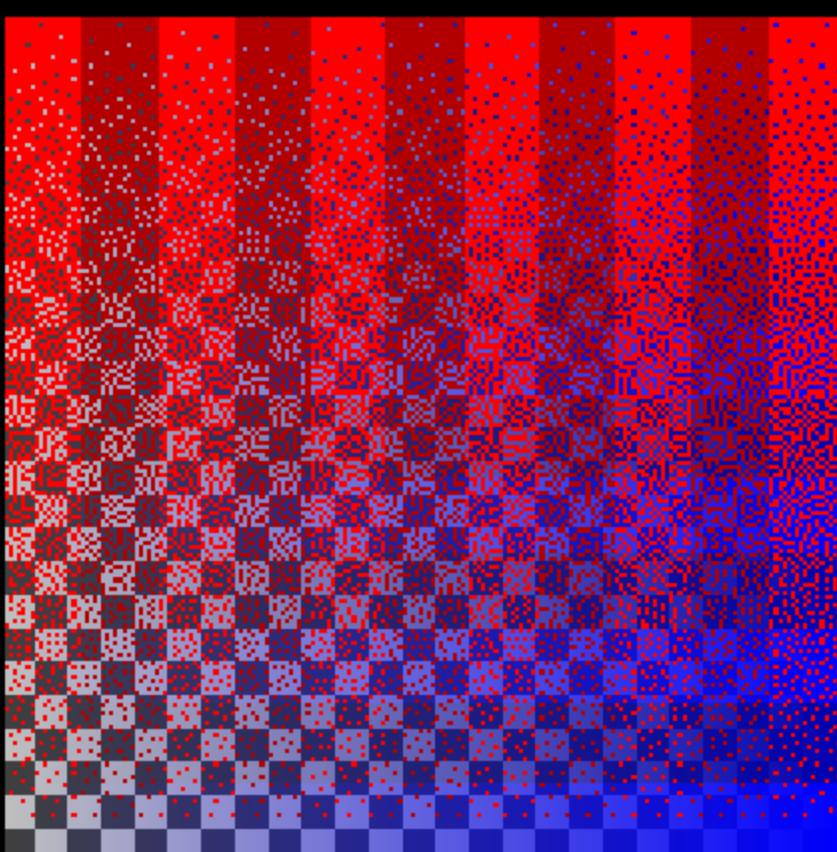
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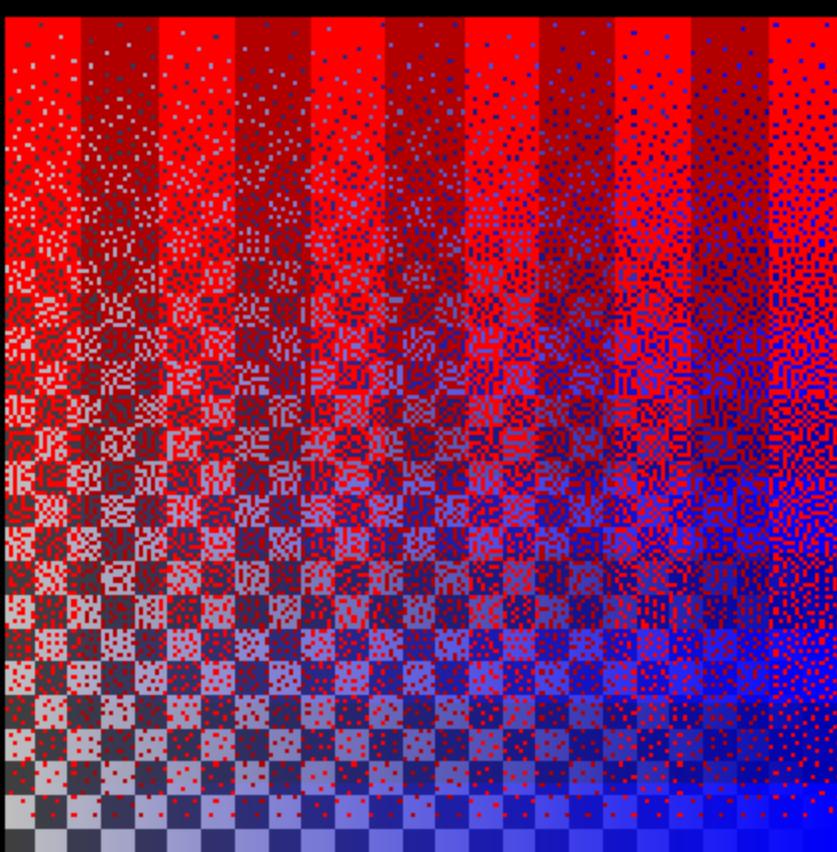
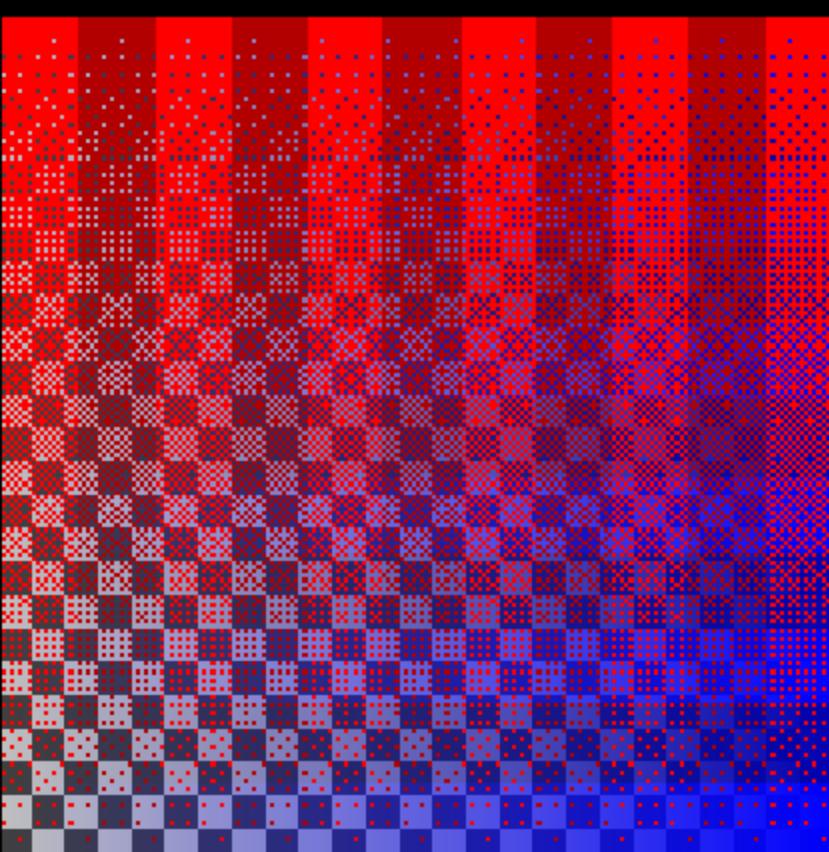
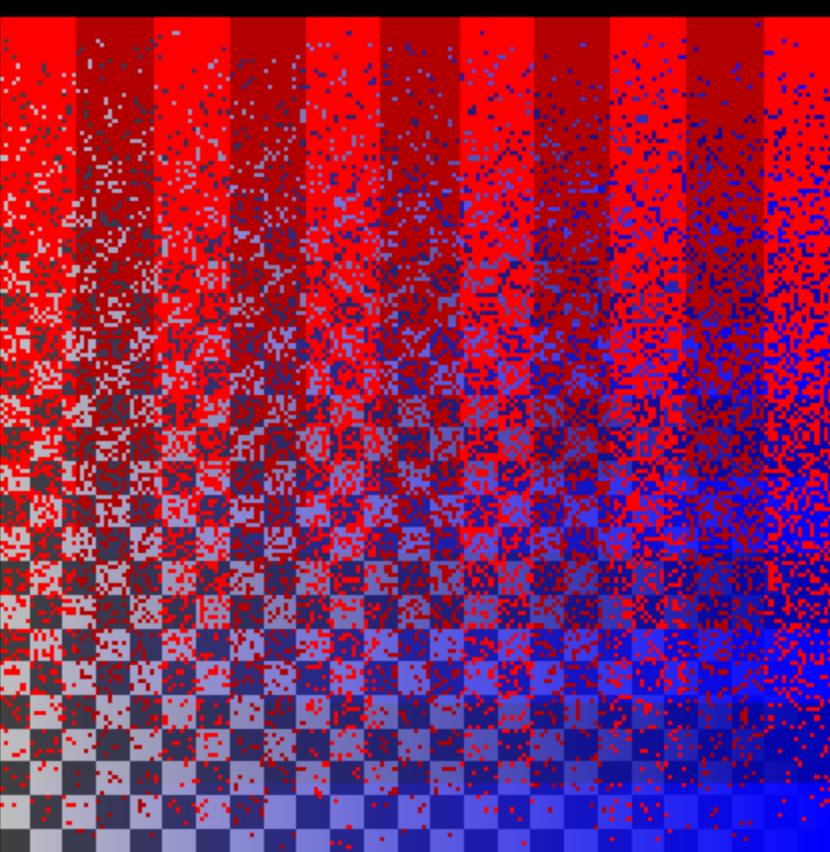
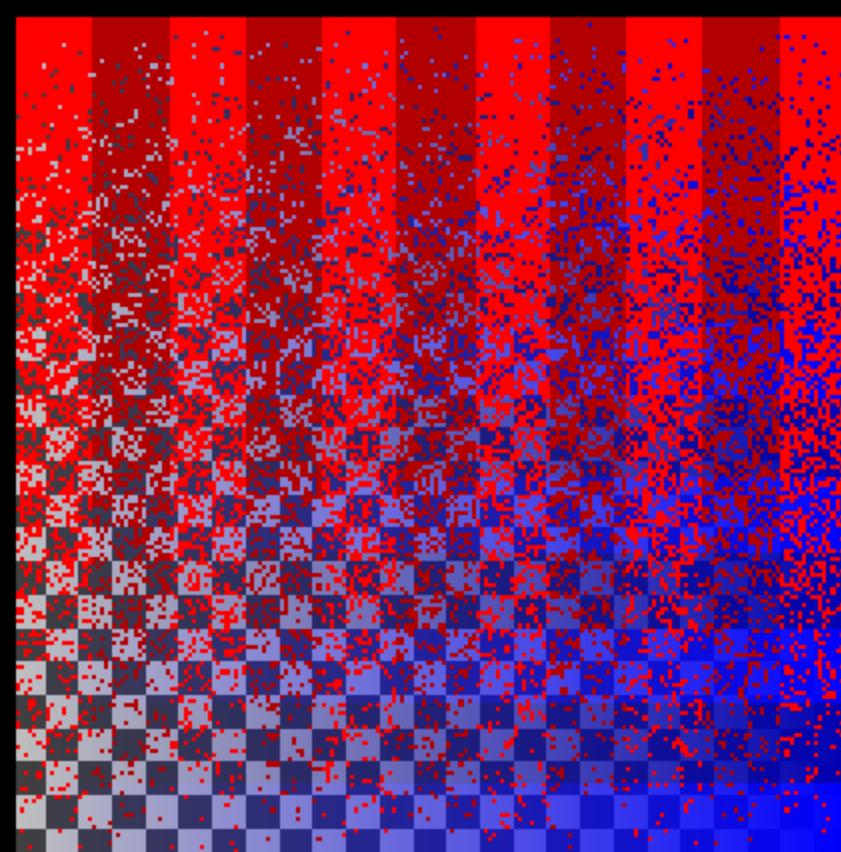
dissolveord



dissolvezf



fg alpha



bg alpha