Grid: ALUSimplexGrid
Macrogrid: grid2d.dgf

Problem: AdvectDiff
Epsilon = 0
Exact solution: $u(x,y,z,t) := \sum_{i=0}^{1} v_i(t) \cdot \mu_i(x) \cdot \nu_i(y) \cdot \omega_i(z)$
$v_0(t) := e^{-\varepsilon t \pi^2 (2^2+1^2+1.3^2)}$
$\mu_0(x) := 0.6 \cdot \cos(2\pi(x-at)) + 0.8 \cdot \sin(2\pi(x-at))$
$\nu_0(y) := 1.2 \cdot \cos(1\pi(y-at)) + 0.4 \cdot \sin(1\pi(y-at))$
$v_1(t) := e^{-\varepsilon t \pi^2 (0.7^2+0.5^2+0.1^2)}$
$\mu_1(x) := 0.9 \cdot \cos(0.7\pi(x-at)) + 0.2 \cdot \sin(0.7\pi(x-at))$
$\nu_1(y) := 0.3 \cdot \cos(0.5\pi(y-at)) + 0.1 \cdot \sin(0.5\pi(y-at))$
Dimension: 2 Polynomial order: 0 Epsilon: 0

Size	$\|u-u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.663982	—	0	2	0.28125
32	0.33966	0.967054	0	4	0.210938
128	0.180586	0.911407	0.004001	8	0.0966797
512	0.0930775	0.956179	0.036002	15	0.0416016
2048	0.0470664	0.983736	0.216014	29	0.0190127

Dimension: 2 Polynomial order: 0 Epsilon: 0.001

Size	$\|u-u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.650919	—	0	2	0.28125
32	0.328884	0.984899	0	4	0.210938
128	0.172918	0.927492	0.008001	8	0.0966797
512	0.0884487	0.967173	0.032002	15	0.0416016
2048	0.0441198	1.00341	0.228015	29	0.0190127

Dimension: 2 Polynomial order: 0 Epsilon: 0.003

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.626438	—	0	2	0.28125
32	0.308777	1.02061	0	4	0.210938
128	0.15898	0.957721	0.004	8	0.0966797
512	0.080414	0.983324	0.028002	15	0.0416016
2048	0.0458527	0.810441	0.220013	29	0.0190127

Dimension: 2 Polynomial order: 0 Epsilon: 0.01

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.556667	—	0.004	2	0.28125
32	0.252361	1.14133	0.004001	4	0.210938
128	0.123084	1.03584	0.008	8	0.0966797
512	0.151531	-0.299968	0.036003	15	0.0416016
2048	0.0406491	1.89832	0.340021	46	0.0118907

Dimension: 2 Polynomial order: 0 Epsilon: 0.03

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.461588	—	0	2	0.28125
32	0.183216	1.33306	0	4	0.210938
128	0.0857641	1.0951	0.004001	9	0.0820312
512	0.053723	0.674834	0.064004	35	0.0169922
2048	0.0343488	0.645279	0.96006	137	0.00378614

Dimension: 2 Polynomial order: 0 Epsilon: 0.1

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.544392	—	0	2	0.28125
32	0.0357943	3.92684	0	8	0.105469
128	0.0226155	0.662419	0.016001	29	0.021215
512	0.0138408	0.708385	0.204012	114	0.00458063
2048	0.00779665	0.828	3.1362	456	0.00110868

Dimension: 2 Polynomial order: 1 Epsilon: 0

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.288209	—	0	25	0.0208333
32	0.102368	1.49335	0.028001	48	0.0108507
128	0.0254251	2.00944	0.196013	97	0.0053202
512	0.00613621	2.05083	1.52409	192	0.00263188
2048	0.00151781	2.01536	12.2408	385	0.00130892

Dimension: 2 Polynomial order: 1 Epsilon: 0.001

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.280244	—	0.004001	25	0.0208333
32	0.0992283	1.49786	0.028001	48	0.0108507
128	0.0240303	2.0459	0.204014	97	0.0053202
512	0.00554506	2.11558	1.54009	192	0.00263188
2048	0.00130694	2.08501	12.1688	385	0.00130892

Dimension: 2 Polynomial order: 1 Epsilon: 0.003

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.265116	—	0.004	25	0.0208333
32	0.0935565	1.50271	0.028002	48	0.0108507
128	0.0222784	2.07019	0.204013	97	0.0053202
512	0.0050488	2.14163	1.52409	192	0.00263188
2048	0.00116464	2.11606	12.4448	385	0.00130892

Dimension: 2 Polynomial order: 1 Epsilon: 0.01

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.21947	—	0.004001	25	0.0208333
32	0.077824	1.49573	0.024001	48	0.0108507
128	0.0184953	2.07306	0.204014	97	0.0053202
512	0.00418472	2.14395	2.43615	308	0.00164488
2048	0.000995764	2.07126	38.8104	1229	0.000408239

Dimension: 2 Polynomial order: 1 Epsilon: 0.03

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.132856	—	0.008001	25	0.0208333
32	0.0494905	1.42464	0.032002	58	0.00903975
128	0.0127978	1.95126	0.47203	231	0.00220927
512	0.00314823	2.02329	7.29245	922	0.000544931
2048	0.000789142	1.99618	117.819	3687	0.000135781

Dimension: 2 Polynomial order: 1 Epsilon: 0.1

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.0340753	—	0.008001	48	0.0104167
32	0.0131236	1.37656	0.104006	192	0.00265842
128	0.00404767	1.697	1.5481	768	0.000654503
512	0.00108931	1.89367	23.9615	3072	0.000162973
2048	0.000278316	1.96863	382.912	12288	4.07034e-05

Dimension: 2 Polynomial order: 2 Epsilon: 0

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.114161	—	0.024001	54	0.009375
32	0.0153295	2.89668	0.164011	107	0.00477512
128	0.00192478	2.99355	1.35608	214	0.00236606
512	0.000242137	2.99079	10.6167	427	0.00117742

Dimension: 2 Polynomial order: 2 Epsilon: 0.001

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.111083	—	0.024002	54	0.009375
32	0.0146167	2.92595	0.172011	107	0.00477512
128	0.00179029	3.02935	1.35209	214	0.00236606
512	0.000218234	3.03624	10.6087	427	0.00117742

Dimension: 2 Polynomial order: 2 Epsilon: 0.003

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.105288	—	0.020001	54	0.009375
32	0.0135277	2.96035	0.184011	107	0.00477512
128	0.00162333	3.05889	1.39609	214	0.00236606
512	0.000191646	3.08244	10.8287	427	0.00117742

Dimension: 2 Polynomial order: 2 Epsilon: 0.01

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.0879073	—	0.024002	54	0.009375
32	0.0107508	3.03154	0.16801	107	0.00477512
128	0.00123367	3.12342	1.5961	256	0.00197178
512	0.000142296	3.11599	24.8416	1024	0.000490207

Dimension: 2 Polynomial order: 2 Epsilon: 0.03

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.0541868	—	0.020002	54	0.009375
32	0.00627409	3.11046	0.316019	192	0.00265299
128	0.000697674	3.16878	5.01231	768	0.000654496
512	8.27004e-05	3.07659	74.3006	3072	0.000162973

Dimension: 2 Polynomial order: 2 Epsilon: 0.1

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.0110445	—	0.072005	161	0.003125
32	0.00118385	3.22177	1.06407	640	0.000786133
128	0.000130213	3.18454	15.969	2561	0.000195619
512	1.54249e-05	3.07754	251.868	10240	4.88472e-05

Dimension: 2 Polynomial order: 3 Epsilon: 0

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.0315575	—	0.264017	225	0.00223214
32	0.00238874	3.72366	1.99212	448	0.00112105
128	0.000215008	3.47379	15.781	897	0.000559285
512	2.08709e-05	3.36482	124.28	1793	0.00027933

Dimension: 2 Polynomial order: 3 Epsilon: 0.001

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.0300203	—	0.264017	225	0.00223214
32	0.00204474	3.87595	2.01213	448	0.00112105
128	0.000122693	4.0588	15.921	897	0.000559285
512	7.32606e-06	4.06587	124.992	1793	0.00027933

Dimension: 2 Polynomial order: 3 Epsilon: 0.003

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.0276888	—	0.268017	225	0.00223214
32	0.00181769	3.92913	2.00813	448	0.00112105
128	0.000110218	4.04367	15.969	897	0.000559285
512	6.8839e-06	4.001	125.336	1793	0.00027933

Dimension: 2 Polynomial order: 3 Epsilon: 0.01

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.0217951	—	0.268017	225	0.00223214
32	0.00141716	3.94293	2.00413	448	0.00112105
128	8.94437e-05	3.98588	25.3816	1434	0.000349554
512	5.49331e-06	4.02523	396.033	5735	8.7254e-05

Dimension: 2 Polynomial order: 3 Epsilon: 0.03

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.0119909	—	0.332021	269	0.00186012
32	0.000795247	3.9144	4.94431	1076	0.000466758
128	5.14723e-05	3.94953	80.509	4301	0.000116366
512	3.26946e-06	3.97667	1222.7	17204	2.90711e-05

Dimension: 2 Polynomial order: 3 Epsilon: 0.1

Size	$\|u - u_h\|_{L_2}$	EOC	CPU	#Iterations	a-dt
8	0.0019657	—	1.10007	897	0.000558036
32	0.000138077	3.8315	16.485	3584	0.000139665
128	9.25908e-06	3.89846	252.792	14337	3.4887e-05
512	6.09807e-07	3.92444	3951.3	57345	8.71992e-06

Total time: 0.252016