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Nodal Discontinuous Galerkin Methods:
Algorithms, Analysis, and Applications

– LIST OF CORRECTIONS AND CLARIFICATIONS –

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List of corrections and clarifications

Notation: First number is page number, second number line number with a "+" counting from the top and a "-" counting from the bottom. Line counts include equations.

Thanks to C. Bahls, A. Panizza, X. Zhu, C. Rohde, S. Field, J. Thorenson for pointing out these misprints.

58, -1 : Matrix FToV should be

$$\text{FToV} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 \end{bmatrix}.$$

59, +3 : This also impacts $(\text{FToV})(\text{FToV})^T$ which becomes

$$(\text{FToV})(\text{FToV})^T = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 \end{bmatrix}.$$

This also implies that [59, +5] should read *rows 1 and 8 indicate*.

67, -2 : $x \in [-2, 2]$ should be $x \in [-1, 1]$.

68, +2 : $E(-2, 0) = E(2, 0) = 0$ should be $E(-1, t) = E(1, t) = 0$.

70,-7 : Software line

```
[Nv, VX, K, EToV] = MeshGen1D(-2.0, 2.0, 80);
```

4

should be

```
[Nv, VX, K, EToV] = MeshGen1D(-1.0, 1.0, 80);
```

71, -20 : Wrong exact solution. Should be

$$H^{(m)}(x, t) = n^{(m)} \left[A^{(m)} \exp(i\omega n^{(m)} x) + B^{(m)} \exp(-i\omega n^{(m)} x) \right] \exp(i\omega t)$$

71, -18 : Wrong exact solution. Should be

$$B^{(2)} = \exp(i2n^{(2)}\omega)A^{(2)}$$

71, -16 : Wrong exact solution. Should be

$$A^{(2)} = \exp(-i\omega(n^{(1)} + n^{(2)}))$$

85, +17 : $a(u_x, v)_\Omega$ should be $a(u_x, \phi)_\Omega$

87, +3 : $\|\varepsilon_N\|_{\Omega, h}^2$ should be $\|\varepsilon_h\|_{\Omega, h}^2$

134, -3 : The statement is only true for $\hat{\mathbf{n}} = 1$. The general statement should be

$$\hat{\mathbf{n}} \cdot (au)^* = \frac{2a^+a^-}{a^+ + a^-} \left(\{\{u\}\} + \frac{1}{2} \llbracket u \rrbracket \right)$$

162,-1 to 163, +2 : Statements

```
drho (mapI) = ...
```

```
drhou(mapI) = ...
```

```
dEner(mapI) = ...
```

should be

```
drhof (mapI) = ...
```

```
drhouf(mapI) = ...
```

```
dEnerf(mapI) = ...
```

163, +6-8 : Statements

```
drho (map0) = ...
```

```
drhou(map0) = ...
```

```
dEner(map0) = ...
```

should be

```

drhof (map0) = ...
drhouf(map0) = ...
dEnerf(map0) = ...

```

165, +7-8 : The purpose of this piece of code is to describe initial conditions at the cell-centers as is required for discontinuous initial conditions. The correct statement should be

```
cx = ones(Np,1)*(sum(MassMatrix*x,1))/2;
```

If the initial conditions are smooth, `cx`, can be replaced by `x` in the codes in lines 9-11.

447, -9 : Software statement

```
x(1) = (alpha-beta)/(alpha+beta+2);
```

should be

```
x(1) = -(alpha-beta)/(alpha+beta+2);
```

449, -1 : $P_k^{(2i+2j+2,0)}(b)$ should be $P_k^{(2i+2j+2,0)}(c)$

467, +12 : Software line

```
[TRI,xout,yout,uout,interp] PlotField2D(2*N, x, y, vort);
```

should be

```
[TRI,xout,yout,uout,interp] = PlotField2D(2*N, x, y, vort);
```

467, -3 : Software line

```
PlotContour2D(TRI, xout, yout, vortout, linspace(-6, 6, 12));
```

should be

```
PlotContour2D(TRI, xout, yout, vort, linspace(-6, 6, 12));
```