C4.3 consultation session 1, 5th May 2021

Note: this will take place at 9am (not 10am, as previously advertised).

As per requests, I will be covering the following (whatever I don't get round to will be finished in the next class):

- Q3 from the 2015 paper. For part b), you will need to assume the following version of Theorem 3.2.3 in your notes: for $1 < p < n$ and $u \in W_0^{1,p}(\Omega)$,

$$\|u\|_{L^{p^*}(\Omega)} \leq \frac{p(n-1)}{n-p} \left(\int_\Omega \sum_{i=1}^n |\partial_i u|^p \, dx \right)^{1/p}. \tag{0.1}$$

  (In previous years, there was more emphasis on explicit constants appearing in various inequalities. As far as I can see from your lecture notes, the precise inequality (0.1) is not given, but you should compare with the recorded lectures if there is any doubt).

- Q2 from the 2017 paper. Again, you will need (0.1) to obtain an explicit constant C in part c), although I'd like to spend most time on part d).

- Q2 from the 2015 paper.

Please continue to submit requests for future sessions, otherwise I will pick random exam questions to cover.

Many thanks,

Jonah