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## Analysis Seminar

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**R. Smith**

will speak on

### **The continuity of betweenness**

Fri 27th October 2017 at 4:00PM

Location: UCD Science North 125

Given a set  $X$ , we can use a suitable ternary relation  $[\cdot, \cdot, \cdot] \subseteq X^3$  to express the notion of 'betweenness' on  $X$ :  $x$  is between  $a$  and  $b$  if and only if  $[a, x, b]$  holds. We assume that this relation is "basic":  $[a, a, b]$  and  $[a, b, b]$  always hold,  $[a, x, b]$  implies  $[b, x, a]$ , and  $[a, x, a]$  implies  $x = a$ . Many natural examples of betweenness arise when  $X$  is endowed with some additional order-theoretic or topological structure. Given  $a, b \in X$ , we can define the "interval"  $[a, b] = \{x \in X : [a, x, b]\}$  ( $= [b, a]$ ). If  $X$  has additional topological structure, it is reasonable to ask whether the assignment  $\{a, b\} \mapsto [a, b]$  has good continuity properties, given a suitable hyperspace topology. We examine this question in the context of "Menger betweenness" on metric spaces  $(X, d)$  ( $[a, x, b]$  holds if and only if  $d(a, b) = d(a, x) + d(x, b)$ ), and the "K-interpretation of betweenness" on topological continua ( $[a, x, b]$  holds if and only if  $x$  is an element of every subcontinuum that includes  $a$  and  $b$ ).

This talk is part of the **Analysis** series. For more, see  
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