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Queuing forum boasts impressive lineup

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You're at an amusement park and you want to ride both the ferris wheel and the roller-coaster. The lineup for the ferris wheel has 10 people. The lineup for the roller-coaster has 100.

Who in their right mind would join the lineup for the roller-coaster first? Queuing theorists, that's who.

University of Windsor mathematics student Samantha Molinaro recently completed a study of queuing times illustrating exactly that scenario.

"That study came out with some weird stuff," said the 21-year-old undergraduate from Sault Ste. Marie, Ont. "Common sense would tell you to pick the shorter one."

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Queuing conference

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But Molinaro said that if the number of new people joining the queues and the rate of people boarding the rides remained constant, you would actually have a shorter total wait if you boarded the roller-coaster first.

"If you do the long line first, then the short line has lots of time to get even shorter. It's so strange, but it would save you time," she said.

Molinaro is one of about 20 mathematicians who will present their findings about queuing at CanQueue 2009 today and Friday at the University of Windsor.

The annual conference about queuing theory, or the study of waiting in line, will bring together math masterminds from across North America who are seeking to reduce waiting times for everything from cheeseburgers to downloading software.

"Queues show up all over the place, not just when you go to the bank or McDonald's," said Myron Hlynka, conference organizer and professor in the department of mathematics and statistics at the University of Windsor. "It's when you get stopped at a traffic light, or call a call centre or are waiting for a hip replacement."

While queuing theory's arcane number crunching and model building sometimes reaffirms common sense — such as the fact that scheduling tasks at non-peak times can reduce lineups — it has also produced some useful innovations. You can thank queuing theory for the express checkout at the grocery store, for instance.

"If you just have a loaf of bread and the person in front of you has a cart full of groceries, you should go first," Hlynka said. "It might only take one minute to sell your loaf of bread and 10 minutes to sell the cart full of groceries. If you go first, the total (cumulative) waiting time between the two people would only be 12 minutes, versus 21 minutes."

Having one lineup for various tellers at the bank is another product of queuing theory, Hlynka said.

"When I was small, there were separate lines for each teller. Sometimes it's not fair, and you want to keep the perception of fairness. The single line actually works better and has a lower average wait for customers."

The keynote speaker at CanQueue 2009 is Chris Simpson, the medical director of the cardiac program at Kingston General Hospital. Simpson will speak about wait times at the hospital from a clinician's perspective. Conference attendees will apply mathematical models to the issue to try to develop a more efficient system.