
$T_2 = K_{2,2} + \delta\, g(2)$
$T_3 = K_{2,3} + \delta\, g(3) + f\tau$


10ème
Qualita


On the Power of Cohorts – Multipoint Protocols for Fast and Reliable Safety-Critical Communications in Intelligent Vehicular Networks
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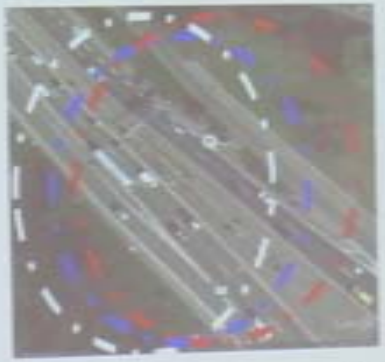
Intelligent Vehicular Networks (IVNs):
platoons, VANETs, clusters, ... comprising fully automated cooperative vehicles
Qualita 13


Cyber-physics on the move...

Cyber-physics on the move…

SC scenarios

Steep breaking, overtaking, on-ramp merging, **lane change**, …



A SC scenario comprises **cyber (communication) phases**, which serve to achieve inter-vehicular agreement, followed by **physical (perception) phases/maneuvers**. Communication modes in a cyber phase are 1-to-many or many-to-1, denoted Xcast. In the sequel,

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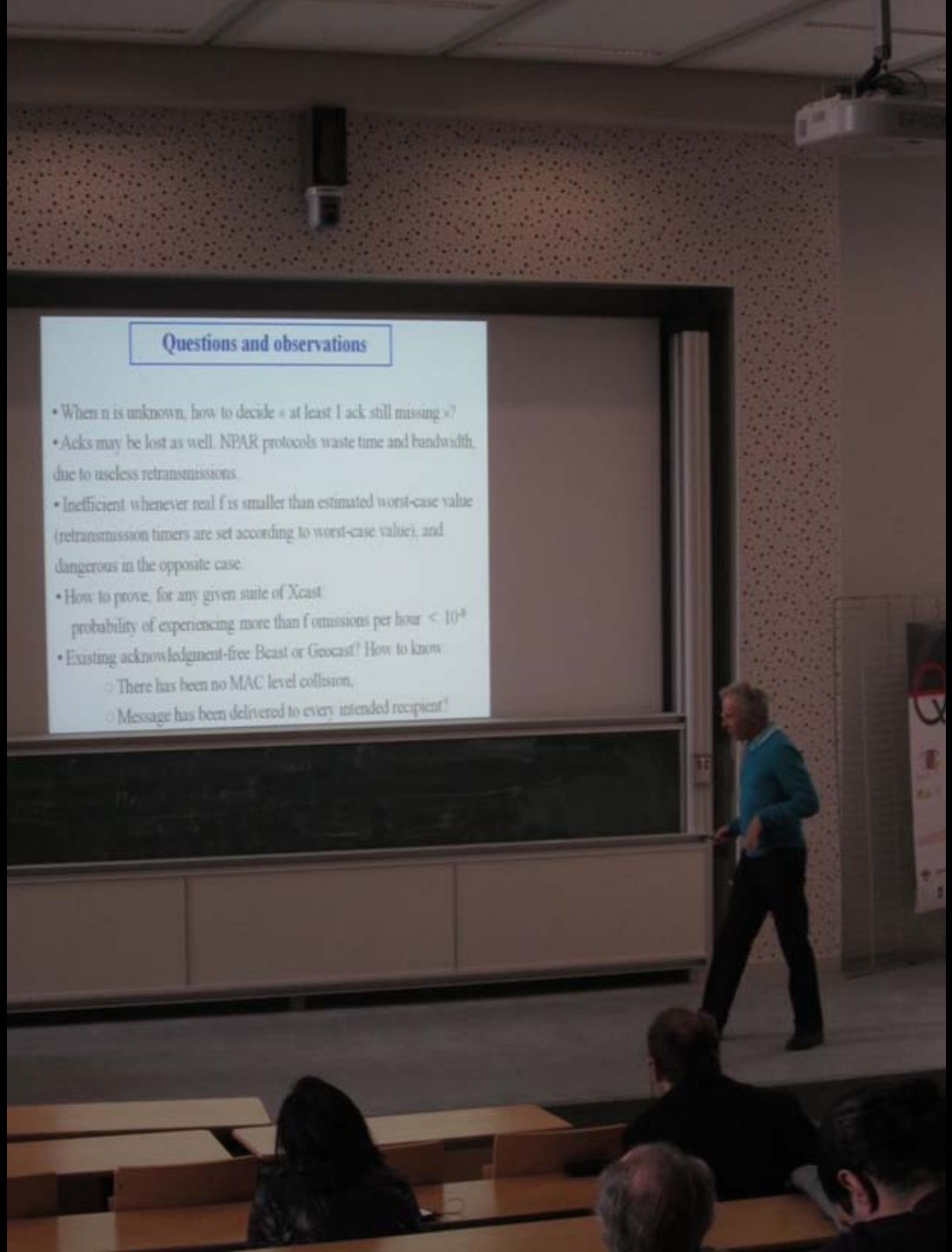
Questions and observations
• When n is unknown, how to decide « at least 1 ack still missing »?
• Acks may be lost as well. NPAR protocols waste time and bandwidth due to useless retransmissions.
• Inefficient whenever real f is smaller than estimated worst-case value (retransmission timers are set according to worst-case value), and dangerous in the opposite case.
• How to prove, for any given suite of Xcast
probability of experiencing more than f omissions per hour < 10^{-9}
• Existing acknowledgment-free Beast or Geocast? How to know
○ There has been no MAC level collision,
○ Message has been delivered to every intended recipient?


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probability of experiencing more than f omissions per hour < 10^{-8}
• Existing acknowledgment-free Bcast or Gocast? How to know
- There has been no MAC level collision
- Message has been delivered to ev ded recipient


QUESTIONS?


TICAL RESULTS
cannot provide worst-case bounds
ion time
resolving contention among g(1) messages
ber of V2V SC messages exchanged in T
$T_1 + T_2 + T_3$
$T_1 = K_{g,1} + \delta\, g(1) + (f+n_c-1)\,\tau$
$T_2 = K_{g,2} + \delta\, g(2)$
$T_3 = K_{g,3} + \delta\, g(3) + f\tau$
$T_1 = T_2 = T_3 =$


ge transmission time
el delay for resolving contention among g(1) messages
) ≡ total number of V2V SC messages exchanged in T
$T = T_1 + T_2 + T_3$
er phase 1
$T_1 = K_{g,1} + \delta\, g(1) + (f+n_c-1)\,\tau$
er phase 2
$T_2 = K_{g,2} + \delta\, g(2)$
er phase 3
$T_3 = K_{g,3} + \delta\, g(3) + f\tau$
R protocols
$T_1 = T_2 = T_3 = \tau$