

.e*.in) ,or -eri,ica.ion o, co ' ;le% cha**i*-con.rol *9*.e' *† 3he 'e.hod* are deri-ed ,ro '
co ' ;u.er-)a 'e ;rinci;le* and re)ard .he *9*.e ' under .e*. a* an o; ;onen. .ha. i* de,ea.ed <hen
.he *;eci,ica.ion i* -iola.ed† 3he 'e.hodolo)9 i* de ' on*.ra.ed on an au.o-codin) i ' ;le 'en.a.ion
o, a 5rake-5lendin) ,unc.ion ,or a hea-9 -ehicle, in co '5ina.ion <i.h a *i'ula.ion 'odel
i ' ;le 'en.ed in Modelica† I. i* *ho<n .ha. a -a*. nu '5er o, *cenario* can 5e anal9=ed <i.h
' odera.e ' anual e,,or., and .ha. re*ul.* corre*;ondin) .o hi)h-co-era)e \$MEA > \$3A

-i \$H.

Best Scenario

3he .e*. con*i*.o, a dri-er .ha. 5rake* and *.eer* .he -ehicle+ 4ear *hi,(in) i* 'ade au.o 'a.icall9+ 3he Dri-er can)i-e in;u.* accordin) .o .he .a5le 5elo<+

Drivers

"a#e	\$nit	%alues
/ , . A .	'	> ! &(9! &-! &*9?
		> ! &9?

6 V.H'C0 . M*+ . 0

3o .e*. and -eri,9 .he 5rake-5lendin) ,unc.ion i. i* nece**ar9 .o *i' ula.e i.* o;era.in) en-iron 'en. includin) .he .rac.or .o<(in)--ehicle, a dri-er, and .he road+ 3hi* en-iron 'en. ' u*. ;roduce reali*.ic re*;on*e* .o .he con.rol ac.ion* co ' ;u.ed 59 .he ,unc.ion+ \$or .hi* ;ur;o*e a 'odel i* 5uil. u*(in) .he Modelica-5a*ed .ool* D9'ola and ?ehicle D9na 'ic* Li5rar9 , and + Modelica i* an o;en-*;eci.ica.ion hi)h-le-el o5/ec.-orien.ed and co ' ;onen.-5a*ed lan)ua)e de*i)ned ,or ' ul.i-do 'ain 'odelin) ,or *i' ula.ion o, co ' ;le% *9*.e ' *+ Modelica i* de*i)ned ,or acau*al and e:ua.ion 5a*ed 'odelin), <hich 'ake* .he 'odel* hi)hl9 reada5le and reu*a5le+ An ou.*andin) ,ea.ure o, Modelica-5a*ed *olu.ion* in .he con.e%. o, -eri.ica.ion .e*.in) i* .he e%;o*ed and 'odi,ia5le 'odel *ource code in co ' 5ina.ion <i.h .he hi)h-le-el 'odel de*cri; .ion*+ l. i* ;o**i5le .o -ie< and 'odi,9 or e%.end .he i ' ;le 'en.a.ion o, co ' ;onen. and *9*.e ' 'odel*+ In .hi* <a9 in*.ru 'en.* can 5e added .o .he -ehicle 'odel, *uch a* *en*or in*.ru 'en.* ,or cri.eria e-alua.ion, and in*.ru 'en.* ,or in;u. e%ci.a.ion and ;ara 'e.er -aria.ion* .o de*cri5e o;era.in) condi.ion*, .olerance -aria.ion*, and ,aul.

in/ec.ion+ \$i)ure 8 *ho<* .he .rac.or ' odel and .he 'ain ;o<er.rain, 5rake*, and cha**i* *u5*9*.e ' * , and .he in*.ru 'en.* u*ed 5e*.Wea-er+ 3he ;o<er.rain 'odel include* a)ear50%, en)ine re.arde, dri-eline re.arde, and dri-eline <i.h ,inal)ear and di,,eren.ial+ 3he 5rake *u5*9*.e ' include* co ' ;onen.* ,or *er-ice di*k-5rake* <i.h ABS+ 3he cha**i* con.ain* ,ron. and rear a%le*, <i.h *eerin), ca5in, ,ra 'e, and <heel*+ 3he -ehicle run* on an in,ini.e ;lane <i.h con,i)ura5le inclina.ion and *ur,ace ,ric.ion+ 3he 'odel con.ain* a5ou. *e-en .hou*and e:ua.ion* and "3 con.inuou* *a.e*+ l. i* .ran*la.ed in.o @-code u*(in) .he D9'ola inline .ra;e=oid in.e)ra.ion ,ea.ure ,or)enera.ion o, e.,icien. real-i ' e* i' ula.ion code+ l. i* .hen co ' ;iled and linked in.o a DLican

. Ö"a`a#

i: À Æ ß % *

