The new measurements confirm the old result that the transition rates for K^* decays are significantly smaller than for K decays, contrary to expectations from models. This result is also confirmed by several direct measurements of the K^*-to-K ratio, obtained without the use of normalizing branching fractions, shown in Table 6. This ratio is about 0.6, which leads to the low values for the form-factor intercepts $A_1(0)$ and $A_2(0)$ given in Table 7. These values are compared with predictions in Table 8. Note that the form-factor intercepts in these tables have been corrected for the new average value $\Gamma(D \to \overline{K}^* e^+ \nu_e) = (4.6 \pm 0.4) \times 10^{10}$ s^{-1}.

Table 6: Direct measurements of $\Gamma(D \to \overline{K}^* \ell \nu_\ell)/\Gamma(D \to \overline{K} \ell \nu_\ell)$.

Experiment	Reference	Measured ratio	Value
CLEO-I	[6] CRAWFORD 91B	$\dfrac{\Gamma(D^0 \to K^{*-} e^+ \nu_e)}{\Gamma(D^0 \to K^- e^+ \nu_e)}$	$0.51 \pm 0.18 \pm 0.06$
CLEO-II	[4] BEAN 93C	$\dfrac{\Gamma(D^0 \to K^{*-} e^+ \nu_e)}{\Gamma(D^0 \to K^- e^+ \nu_e)}$	$0.60 \pm 0.09 \pm 0.07$
CLEO-II	[4] BEAN 93C	$\dfrac{\Gamma(D^+ \to \overline{K}^{*0} e^+ \nu_e)}{\Gamma(D^+ \to \overline{K}^0 e^+ \nu_e)}$	$0.65 \pm 0.09 \pm 0.10$
E653	[18] KODAMA 92C	$\dfrac{\Gamma(D^+ \to \overline{K}^{*0} \mu^+ \nu_\mu)}{\Gamma(D^0 \to K^- \mu^+ \nu_\mu)}$	$0.43 \pm 0.09 \pm 0.09$

Table 7: Form factors for $D^+ \to \overline{K}^{*0} e^+ \nu_e$. All results are normalized to $\Gamma(D \to \overline{K}^* e^+ \nu_e) = (4.6 \pm 0.4) \times 10^{10}$ s^{-1}.

Experiment	Ref.	$A_1(0)$	$V(0)$	$A_2(0)$
E653	[18]	0.57 ± 0.08	1.2 ± 0.3	0.47 ± 0.16
E691	[12]	0.49 ± 0.07	1.0 ± 0.3	0.0 ± 0.2
E687	[15]	0.59 ± 0.05	1.0 ± 0.3	0.46 ± 0.11
Ave.		0.56 ± 0.04	1.1 ± 0.2	0.40 ± 0.08

Table 8: Form factors: comparison with theory.

		$f_+(0)$	$A_1(0)$	$V(0)$	$A_2(0)$
Model	Exp. average =	0.75 ± 0.03	0.56 ± 0.04	1.1 ± 0.2	0.40 ± 0.08
Quark models	ISGW [30]	0.8	0.8	1.1	0.8
	WSB [31]	0.76	0.88	1.3	1.2
	KS [32]	0.7	0.82	0.8	0.8
	AW/GS [33]	0.7	0.8	1.5	0.6
Lattice gauge	BKS [34]	$0.9 \pm 0.1 \pm 0.2$	$0.8 \pm 0.1 \pm 0.3$	$1.4 \pm 0.5 \pm 0.5$	$0.6 \pm 0.1 \pm 0.2$
	LMMS [35]	0.63 ± 0.08	0.53 ± 0.03	0.9 ± 0.1	0.2 ± 0.2
Sum rules	BBD [36]	0.60	0.5	1.1	0.6

Cabibbo-suppressed semileptonic decays

The rates of Cabibbo-suppressed pseudoscalar semileptonic decays determine the product of $|V_{cd}|$ times a form factor. Assuming that $|V_{cd}|$ is known precisely from unitarity of the CKM matrix, the main goal is to determine the form factor. The form factors measured in Cabibbo-suppressed charm decays are related by HQET [38] to those for $b \to u$ semileptonic decays in the q^2 region near $q^2_{\rm max}$, approximately 18–26 GeV^2. Assuming appropriate pole forms for the form factors, the ratios of branching fractions can be written as

$$R_\pi = \frac{\mathrm{B}(D^0 \to \pi^- e^+ \nu_e)}{\mathrm{B}(D^0 \to K^- e^+ \nu_e)} = 2 \times \frac{\mathrm{B}(D^+ \to \pi^0 e^+ \nu_e)}{\mathrm{B}(D^+ \to \overline{K}^0 e^+ \nu_e)} = 1.97 \times \left|\frac{f_+^\pi(0)}{f_+^K(0)}\right|^2 \left|\frac{V_{cd}}{V_{cs}}\right|^2 . \tag{6}$$

The factor of 2 difference between these two modes arises from the $1/\sqrt{2}$ in the coupling of $d\bar{d}$ to a π^0.

To date, measurements of Cabibbo-suppressed semileptonic decays suffer from poor statistics; better results should be forthcoming from the new high-statistics charm experiments. The MARK-III measurement [20] of $\mathrm{B}(D^0 \to \pi^- e^+ \nu_e)$, together with our value